ROCKS AND MINERALS

Official Journal of the Rocks and Minerals Association

Vol. 22, No. 3 Whole No. 188

A Magazine for Mineralogists, Geologists and Collectors

MARCH, 1947

35c

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Pollucite, Maine. Xlline. with some Quartz. 3 x 2 ..... 2.00
Chlolite, Greenland. Xlline. w. associated minerals. 2½ x 2½ 2.00
Pyrargyrite, Andreasberg. Fine xls. in mass. 2¼ x 2 x 1½. 8 oz. 30.00
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Caledonite, Leadhills, Scotland. Minutely xld. w. Linarite. 2½ x 2¼ .. 7.50
Pectolite, Paterson. Very fine large botryoidal group. 5 x 4 x 2 ..... 8.00
Chalcophanite, Franklin. Minutely xld. on Hydrohetaerolite. 3 x 2 ..... 2.50
Vesuvianite. Vilui River, U.S.S.R. ⅞" loose xl. 3.00
Bornite, Butte. With some Chalcocite, fine iridescent mass. 3 x 2½ x 1½ 2.00

Transportation extra. Terms cash with order. Money refunded on unsatisfactory specimens returned within one week of receipt.

HUGH A. FORD

OFFICE AND SHOWROOM: 110 WALL STREET **NEW YORK 5, N. Y.**

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No lists furnished, but enquiries for specific minerals welcomed.

ROCKS and MINERALS
PUBLISHED MONTHLY

Edited and Published by
PETER ZODAC

MARCH
1947

CONTENTS FOR MARCH, 1947

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ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

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CHIPS FROM THE QUARRY

Advertisers—Please Cooperate!

We are planning to attend the 8th Annual Convention of the California Federation of Mineralogical Societies which will be held in the Museum of Natural History, Santa Barbara, Calif., on May 23, 24, and 25. And while we are out there, we would like to attend, also the Convention of the Rocky Mountain Federation of Mineral Societies to be held in Salt Lake City, Utah, on June 12 and 13.

In order to attend these conventions, we would have to get the May issue of *Rocks and Minerals* out by May 15 while the June issue might not come out until June 25 or a few days later.

We would gratefully appreciate it if our advertisers would help us to attend the conventions by sending in their June ad copy early—with the May ad copy—or better still, repeat the May ad in the June issue. Will you please cooperate with us?

Attention Club Secretaries!

When sending in a report on your club activities, will you please tell us the date of the meeting and where held? And when names are mentioned more than once, please see that they are spelled the same in each case. Some of the reports are badly scribbled and often hard to decipher.

Box Ads

During the past few months a number of ads were printed in *Rocks and Minerals* in which the name and address did not appear but the reader was referred to a Box—care of Rocks and Minerals, Peekskill, N. Y. All of these ads belonged to individuals or firms who did not want their names or addresses to appear—why, we don't know.

In the future if more such ads appear and you answer them, always address your envelope as instructed in the ads. When your letter reaches us, we cross off what you have written on the envelope then write on it the name and address of the advertiser and forward the letter on to him without delay. If you fail to write down the "Box Number," we think the letter is for us and it is opened—only to find it does not belong to us. Then we must find a clean and larger envelope in which your letter is inserted with a note stating it was opened by mistake, the envelope addressed and then sent on to the advertiser. We believe that when you fail to follow instructions in the ad, your letter is not favorably received by the advertiser.

If Only All Readers Thought So!

Editor R&M:

I hope you take the Western trip and have a grand time. Take the trip even if we miss an issue of *Rocks and Minerals* because we, the readers, owe you a vacation for a wonderful job done under difficult conditions.

Donal Hurley
Feb. 28, 1947 Little Falls, N. Y.

Rocks and Minerals Needs Articles

Due to the fact that *Rocks and Minerals* is now 100 pages thick, our supply of articles is running low. We can use articles on any phase of mineralogy or geology but those covering field trips, localities, and lapidary procedure are especially desirable. If you have not as yet prepared an article for us, send for our "Hints to writers for *Rocks and Minerals*." It will give you many ideas and suggestions. A post card request will bring it.

Many collectors take long trips, visit a large number of localities, find some excellent minerals but never write up any of their activities. Take a few nights off and prepare a few notes for us. We will be pleased to print what you send in and your friends will enjoy reading your article in *Rocks and Minerals*.

Please note, we do not pay for articles—they must be donated, gratis.

ROCKS and MINERALS

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MARCH 1947

THE MINERALS AND GEOLOGY OF GOLD HILL, COLORADO

BY RICHMOND E. MYERS

Dept. of Geology, Muhlenberg College

High up in the Front Range of the Colorado Rockies, not many miles (as the crow flies) west of Boulder, is the picturesque little mining town of Gold Hill. Altho not perhaps as famous to eastern mineral collectors as Franklin, New Jersey, or the Maine pegmatites, the region around this western mining camp might well become a Mecca for mineral lovers who are interested not merely in collecting minerals but also in working with a backdrop of some of the finest scenery America has to offer, amid associations that smack strongly of the old western mining days, so famous in song and story.

The mineral region of the Gold Hill area roughly embraces all of the telluride belt in Boulder County. The altitude of the region varies roughly between 6000 and 8000 ft., and most of the mines can be reached by automobile over dirt roads which the people living in the district consider excellent, but which to the eastern driver have some terrific aspects. The lack of guard rails at places where the two wheels of your car that happen to be on the outside of the road, frequently seem to be hanging over eternity, is one of the common mental hazzards of mountain driving in Colorado. The twelve miles from Boulder to Gold Hill will give anyone some never-to-be-forgotten moments, but you get used to it, provided you don't have to pass some other car on the curves, and the cooling system of your engine is in good working condition.

Gold Hill is not a large community. It has a population of around one hundred people, a few of whom allow themselves to be snowed in for the winter months, after the rest move down several thousand feet to Boulder before the snow appears. A number of mining camps lie close by, such as Sunshine, Salina, and the Sugar Loaf District. Fringing the region are the Ward, Jamestown, and Nederland camps, and still further away, but all within a day's journey (round trip) are Central City and Idaho Springs. It is however our purpose to describe collecting in the immediate vicinity of Gold Hill, so we shall limit our discussion to points within an hour's walking distance of the town.

The question might be raised regarding accommodations in such a small place. The answer is simple. Just less than a half mile outside the town is the Double M Ranch, a very comfortable establishment, with a real western atmosphere. It is far from pretentious, and you may engage either a room in the big ranch house or a small cabin near by, with board (and what a table!) for a very moderate sum. It is an ideal spot for youngsters or members of the family who are not interested in hunting minerals, for while the "rock hounds" hit the trail, those not so inclined may settle down to the delightful life of a real western ranch.

Situated right on the ranch are several gold mines with lucrative dumps. These furnish collecting spots for your first half day in Gold Hill, for if you are not used to working at an altitude of 8000 ft. it is best to take it easy in the beginning, and start collecting under conditions requiring the least amount of physical exertion.

The geology of the region might well merit some attention. Gold Hill is situated almost on the northwestern edge of a small batholith composed of the pre-Cambrian Boulder Creek granite. Schists of the Idaho Springs formation (also pre-

Cambrian) flank the batholith in this region, and in places penetrate the granite. These pre-Cambrian rocks have been intruded by a number of Tertiary dikes, varying in composition from diabase to alaskite. Throughout the area are a series of marked northwest trending faults, known as breccia reefs. These are called "dikes" by the miners. They have a definite influence on the distribution of the ore deposits. An abundance of vein fissures is also common, particularily adjacent to the breccia reefs. Both were probably formed at the same time.

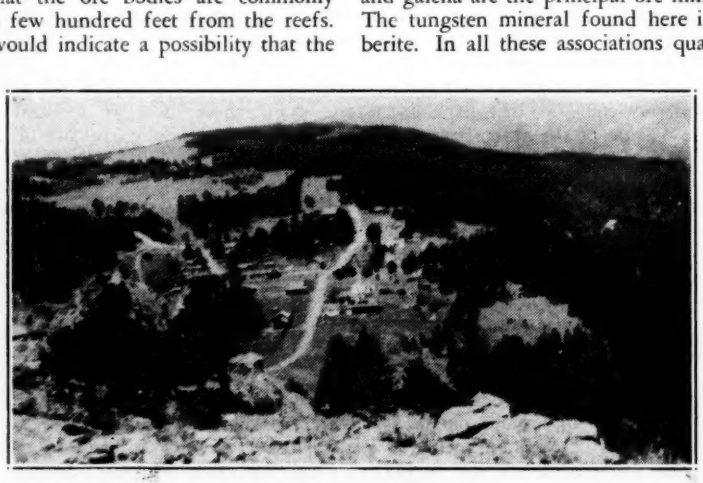
The reefs are somewhat diversified in character. Some are narrow, strongly sheared fault zones. Others are quite wide and show little shearing. Some are highly silicified. Others hardly show any silicification. They all however carry small amounts of disseminated hematite, which gives many of the fault zones a reddish color, thus aiding in their field identification. This feature has been of considerable help to the prospectors.

It is in these reefs and fissure veins associated with them, that the bulk of mineralization has taken place. Goddard tells us that 90% of the production of the Gold Hill camp came from an area inside 3000 ft. of the major breccia reefs, and that the ore bodies are commonly only a few hundred feet from the reefs. This would indicate a possibility that the fault zones formed the channels through which the ore-bearing solutions rose towards the surface. It is a splendid example of structural control of ore formation.

The principal metal mined has of course been gold, but a few silver mines have been in production, and some lead was also worked in this region. One mine has shipped tungsten ore. The bulk of the gold has come from the veins, which are commonly the gold-telluride type, altho two other types exist, some pyrite-gold veins, and a few silver-lead veins.

The gold-tellurides are by far the most important ore minerals, and of these petzite and sylvanite are the most common, altho hessite is to be found at a number of places. Less common are altaite and coloradoite. Tetradymite, calaverite, and native tellurium have been found. In some mines free gold is fairly abundant. Mixed with the telluride veins one finds some pyrite and small quantities of sphalerite and galena.

In the pyritic veins, along with free gold, pyrite and chalcopyrite are the principal minerals, altho small quantities of the lead and zinc sulphides are present. In the silver-lead veins tennantite and galena are the principal ore minerals. The tungsten mineral found here is ferberite. In all these associations quartz is



Gold Hill, Colorado (looking west.)
Continental Divide in Distance.

the chief gangue mineral, and in places ankerite and other carbonates are locally abundant.

Most of the mines lie just east and south of the town. Some are actually in the town, and a number lie immediately west of the community. The dumps of almost any of the mines in the area will yield specimens, but the best material is not just lying around waiting to be picked up. Seemingly "tons" of rock must sometimes be gone over carefully before the search is rewarded, but the time thus spent will prove worth while if the sorting is done systematically, and providing of course, the searcher knows what he or she is looking for, and can recognize the minerals when they appear.

Just west, and immediately adjoining the property of the Double M Ranch, is one of the most interesting mines of the district. It is one of many mines that were opened for copper in the Colorado Front Range, and as a copper mine proved to be hardly worth operating. However, in this particular mine, nickel was recognized in 1930, and in the subsequent working some 25,000 tons of nickel ore was located running from 2% to 3% nickel. The mine, officially known by the name "Copper King" is locally "Yeager's Mine" for its owner, or just, "the Nickel Mine." As this metal is not of common occurrence in the United States, this locality is well worth a visit, providing you first stop at Mr. Yeager's home close by the upper tunnel, and secure his permission to look around.

The deposit occurs in a lenticular layer of amphibolite in a biotite schist of the Idaho Springs formation, just west of the border of the Gold Hill batholith. The amphibolite is cut by a number of different kinds of dikes, all of which in turn are intruded by a diabase dike. These dikes seem to be all pre-Cambrian, except the diabase which is probably Tertiary.

The nickel however is believed by Goddard and Lovering to be pre-Cambrian. They think the ore is genetically related to the Idaho Springs formation, altho the theory that it is associated with the Tertiary diabase merits some consideration. The ore itself occurs in layers of the amphibolite. The minerals are pyrrhotite, pyrite, chalcopyrite, and a number of nickel minerals irregularly disseminated, or replacing primary minerals in the amphibolite. Lovering in a microscopic study recognized the following minerals:

Pyrite, arsenopyrite, polydymite, pyrrhotite, sphalerite, chalcopyrite, quartz, bravoite, violarite, cobaltite, niccolite, pentlandite, and millerite.

It is not be assumed that all of these minerals will appear on the dumps as collector's prizes, but a fair selection of them can be picked up in the debris below the lower tunnel opening. As intimated, the mine has two tunnels, the upper one being just over one hundred feet above the lower one. Each penetrates a somewhat different zone of mineralization. The upper tunnel was driven into the ore of the oxidized zone, where malachite and chrysocolla are common.

Double M Ranch, Gold Hill, Colorado
(View Looking Southeast)

This was the original opening when the mine was worked for copper. The presence of garnierite here led to the further search for nickel, and drilling revealed the other ores below. Considerable quantities of the oxidized minerals are found on the dumps outside the upper tunnel.

The United States Geological Survey takes the position that the deposit is comparatively small, but Mr. Yeager has gathered evidence through drilling that the nickel ore persists far below the limit set by Goddard and Lovering, and he is certain that a considerable tonnage is present waiting to be recovered..

Whether one spends several days, weeks, or months at Gold Hill, it would be difficult to exhaust the collecting possibilities. There are literally mines on all sides, and every opening has a lure that is irresistible. True, many of the dumps will prove somewhat disappointing, but others will turn out to be bonanzas. Perhaps, if you are pressed for time, and would like to know just which mines have the most to offer in their dumps, a visit to Mr. Paul Bunzel would be in order. Even if you have all the time in the world, drop in and visit with this Gold Hill collector. Paul lives in the Post Office, where his good wife, Nora, takes care of the United States Mail. He knows every mine in the district, and he has an inexhaustible fund of knowledge about Colorado minerals which is at the disposal of all fellow collectors. He is always happy to greet you, and had it not been for his friendly cooperation, the author of this little paper would have had considerable less to show for his all too few days at Gold Hill in June of 1946.

Added herewith are several references that are essential reading if you decide to invade the Gold Hill region in search of minerals:

Crawford: Geology and Petrology of the Sugar Loaf District, Boulder County, Colorado. University of Colorado, 1909.

Lovering and Goddard: Geologic Map of the Front Range Mineral Belt, Colorado. Explanatory Text, Colorado Scientific Society, 1938. (The map printed by the United States Geological Survey)

Goddard, N. E.: Preliminary Report on the Gold Hill Mining District, Boulder County, Colorado. Colorado Scientific Society, 1940.

Goddard and Lovering: Nickel Deposit near Gold Hill, Colorado. United States Geological Survey Bulletin 931-0.

Octahedral Pyrite From Woodend, England

At the Woodend hematite mine, 4 miles northwest of Keswick, Cumberland, England, small octahedral crystals of pyrite encrusting calcite crystals are often found. Specimens from this mine are most attractive at times and the smaller the pyrite crystals the more beautiful are the specimens.

Keswick is in the southern part of the county of Cumberland in northern England.

World's Deepest Borehole Now in Oklahoma

In the January, 1947, issue of *Rocks and Minerals,* it was announced (p.35) that the world's deepest borehole was in California. This was the Valley Well that was being drilled by the Pacific Western Oil Corporation. The hole, located near Lost Hills in Kern County, was down 16,668 feet.

The Valley Well, however, has been surpassed by one that was sunk 5 miles north of Fort Cobb, in Caddo County, of Western Oklahoma. This, too, was drilled for oil and by the Superior Oil Co. On Feb. 3, 1947, its depth was 16,668 feet (tieing the depth of the Valley Well) but since then it has been deepened—the last depth called to our attention before *Rocks and Minerals* went to press, was 16,935feet. The Superior Well was started in May, 1946, and is still being deepened.

Rocks and Minerals is indebted to Jay E. Gilkey, of Oklahoma City, Okla., and to T. Orchard Lisle, of New York City, for the information on the Superior Well. We hope they will keep us informed of the progress made by the well and especially anxious are we to learn the final depth when the hole is finished.

A TRIP TO MT. ADAM AND PINE ISLAND, ORANGE COUNTY, NEW YORK

BY P. R. COSMINSKY
509 Timberlane, Falls Church, Va.

On Sunday, April 28, 1946, a party of four members of The New York Mineralogical Club made a field trip to the vicinity of Mt. Adam and Mt. Eve in southwest Orange County, New York. Those in the party were O. Ivan Lee, Lou Perloff, Leo N. Yedlin and P. R. Cosminsky.

Mt. Adam, the first place visited, is best reached by the following route. Using Warwick, N. Y., as a point of departure, follow the road westward through Edenville and Little York to Pine Island. At Pine Island, turn northeast on the paved highway toward Goshen. Turn right at the first road, again right at the end of this road to the lane that leads to the home of Karl Johnson. This name is on the mail box on the south side of the lane. The people who live in the first house from the road are very friendly and one's car may be left in their yard.

The old granite quarry on the northwest slope of Mt. Adam can be reached by following a trail that starts almost directly in front of this house. The quarry is visible from the road leading eastward from the paved highway towards Mts. Adam and Eve at an elevation of approximately 850 feet above sea level.

Several hours were spent at this quarry and quite a few minerals were collected. Allanite was found in fairly good crystals and fragments of crystals. There are two distinct types of allanite here; one tends to be rusty and altered where exposed, from weathering, the other is stable, black and exhibits good crystal forms and faces.

Most of the stable type of allanite was found in an almost flat area about 25 or 30 feet in diameter, between the quarry pool and the dump. This spot is covered with small pieces of granite and the allanite was found by lying prone on the ground and closely inspecting the debris. Fragments of purple and white fluorite are found here also, and are usually a good clue to the presence of allanite with which it is not infrequently closely associated. Most of the crystal fragments were tabular in habit, although several fairly good orthorhombic crystals were found.

On the dump north of this spot a piece of pegmatite about 12 by 6 by 4 inches was picked up containing about 50 per cent. allanite in tabular crystals. Due to the extreme brittleness of these crystals, no attempt was made to separate them from matrix. Several pieces of granite were collected which showed the rusting disintegration of the surface due to the weathering of the allanite. This was the reason for discontinuing operations at the quarry, as the rust spots spoiled the finished faces of the granite after it was cut and used in buildings. The granite surrounding these crystals often shows the long radiating cracks characteristic of radio-active minerals.

Several fairly good scapolite crystals were found in the dump, and one small piece of pegmatite was picked up that was covered with a drusy coating of epidote. Specimens of fairly well crystallized oligoclase and microcline were also found, and some of the granite contained reddish-brown transparent to translucent blebs and fragments of a mineral that remains unidentified. Magnetite, pyroxene and pyrrhotite were likewise noted.

The next localities visited were two limestone islands situated about one-quarter of a mile southwest of Mt. Adam, in what is known as the "Drowned Lands." This area was a swamp a century ago and at present is devoted to onion farming. The islands were reached by walking west and southwest from the Johnson farm home, along a road that traverses the onion farms. This road is passable for cars in dry weather, but is not recommended otherwise.

These islands lie in a belt of limestone, and a peculiar feature of these outcrop-

pings is the presence of cedar trees which grow only over the limestone and are not found elsewhere in the neighborhood. There is very little bare rock exposed on the islands, but numerous small boulders of limestone jut out of the ground. These are all badly weathered, and the most practical method of inspection is to break a piece off each exposed lump and examine the fragment for minerals.

Considerable chondrodite, variety, norbergite, was found in this fashion, as well as two small spinels, one zircon crystal, some small crystals of titanite, and some rather good flaky graphite. All of this material was found on the north and east side of the island. A contact outcropping on the southeast side of the island was worked over and yielded quite a lot of dark scapolite in intermixed masses of crystals, associated with crystals of pyroxene and brown titanite. This outcropping warrants further investigation as it resembles one that was often described in the past as containing excellent spinels.

The next and last stop on the trip was made at an abandoned limestone quarry about one mile southwest of the village of Pine Island, on the road to Glenwood and McAfee. The turnoff is immediately south of the bridge across Pochuck Creek, and the road runs in a spiral around the hill or island. Cars can be driven right on to the quarry floor. This quarry, which is very extensive, was in operation until 1943 and there is an abundance of boulders and other material to work on inside of the quarry. The dumps should prove worthwhile, but time did not permit extensive examination of them on this trip. The quarry is so situated that the lighting is excellent until almost sunset.

The limestone is very pure and white, but most of it is too lean to be worth prospecting. A little chondrodite, variety norbergite, and some bladed tremolite were found in the limestone, but little else of interest with the exception of some violet fluorite and a few zircon crystals which could not be removed. The weathered material and the infrequent pegmatite contacts on the west and south walls of the quarry paid better dividends.

Pyrite, pyrrhotite, arsenopyrite, bornite and chalcopyrite were found disseminated in the rock, and several small specimens were collected that showed a very dark purple fluorite though small in size. Several small crystals of titanite and spinel were also found, and one boulder covered on one side with sheets of excellent molybdenite, several good specimens of this being secured.

On the way back to the car, Lou Perloff stopped to examine a mass of granite and calcite that showed iron oxide stains. When he attempted to chisel a piece off this boulder, the entire side of it cleaved off. This was a flat piece of rock, about 30 by 16 by 4 inches in size. It was found to contain some very large masses of crystalline pyrite. Close examination revealed numerous complex crystal faces, all covered with a peculiar characteristic thin bronze-red coating. There were many crystals in the mass that were so distorted as to appear to be tabular in habit. They ranged in size from one-eight of an inch to as large as four inches in diameter. Some of the better developed smaller crystals were octahedral. Well developed quartz crystals were noted also in this rock, as well as some very small black tourmalines, one good apatite crystal, and a small amount of purple fluorite. The only other type of pyrite noticed in the quarry was in the form of small pyritohedrons and only a few of these were found.

This last find was a fitting climax to a perfect day, and furnished most of the conversation on the trip home.

Addenda

On the excursion of The New York Mineralogical Club to Pine Island on Sunday, November 10th, 1946, several additional minerals new to this locality were found, inclusive of allanite exhibiting radial cracks typical of radioactive minerals in a hard matrix, and a crystal of what had every appearance of being garnet.

Some additional notes on the minerals of the Pine Island quarry (Atlas quarry) are taken from the unpublished report

of Dr. Clifford Frondel's "Mineral Localities of Putnam, Rockland, Westchester, and Orange Counties, New York," made by him a year or so before the last war on the authorization of Dr. Herbert P. Whitlock, of the American Museum of Natural History, who expected to use the information in a new and revised edition of his "Minerals of New York State."

Chondrodite: Extremely abundant as yellow grains disseminated in the limestone. Possibly norbergite. A variety is found in the way of red-brown crystals, rather larger in size than the yellow type. Both types occur together.

Hornblende: Two varieties.

(a) *Edenite.* Fine prismatic crystals embedded in calcite.

(b) Black crystals, up to 2 inches in size.

Augite: Small (1 cm.) prismatic crystals of a green-black color. Both basal and prismatic parting is shown.

Phlogopite: Fine crystals can be found. One embedded crystal measured 8" across the base and was about 20" long. Small flakes are abundant.

Talc: Present in small amounts as an alteration product of tremolite.

Diopside: Abundant in well-formed crystals up to 3 cm. in length; greenish white to gray translucent crystals. Also massive, in large blocks.

Scapolite: Rough gray-green crystals associated with diopside. Uncommon.

In conclusion, Dr. Frondel states: "This is one of the best localities in the neighborhood of New York City."

References

J. F. Kemp and C. A. Hollick. Granite of Mounts Adam and Eve, Warwick, Orange County, N. Y., and its contact phenomena. *N. Y. Acad. Sc., An.* 7:638-656 (1894).

Hoadley, Charles W. Some Mineral localities in Orange County, N. Y. *Rocks and Minerals,* June, 1928, pp. 33-34.

Zodac, Peter. Atlas quarry near Pine Island, N. Y., *Rocks and Minerals,* May, 1940, pp. 162-164.

SOME LOST MINERAL LOCALITIES OF NEW ENGLAND

IV. Warren St. Quarry, Brighton, Mass.

BY PROF. CHARLES PALACHE, Cambridge, Mass.

For many years a quarry for road metal was operated in Brighton at the point where Warren St. intersects Cambridge St. The site is now covered by a building but while it was in activity it was a fruitful mineral locality. So far as I know it has never been described.

The rock broken here was an amygdaloid, in contact at one point with red shale. The amygdules were often lined with epidote of good color and in distinct crystals. There were many veins, of several periods and different mineral content. Some were wholly filled with actinolite of an asbestiform habit, the fibres reaching several inches in length and generally inclined to the walls of the vein. One vein of massive prehnite was found of an almost white color. More interesting were the open veins with walls coated with calcite crystals of a variety of habits, bright quartz crystals, or gray chalcedony with botryoidal surface. Albite crystals also lined some veins, the small crystals glassy and showing typical albite twinning. Specular hematite was its common associate. Now and then platy barite was one of the last minerals to form in a cavity, but no free crystals were found. Chalcocite and bornite were sparsely present and their oxidation yielded malachite and chrysocolla. Oxides of titanium were identified on a few specimens but were very exceptional.

It was a loss to the classes in Mineralogy at Harvard when this locality ceased to be available for spring walks. All that remains of it now is several trays of specimens in the paragenetic collection in the Museum.

AN AMATEUR PALEONTOLOGIST IN EUROPE PART. II—ENGLAND

BY HARRELL L. STRIMPLE
Bartlesville, Okla.

A large detachment of the 815th Signal Port Service Company was assigned to operate the Signal Services of the Port Command in Liverpool, England. In the fall of 1944 I was assigned to the detachment, probably because I did not "report in the proper manner" to a district inspecting officer in the Radio Repair Shop at headquarters in Glasgow, Scotland. If it were meant to be punishment, the Signal Officer was certainly misinformed for I found the detachment comfortably settled in Kirby Hostel, sometimes referred to as the Country Club of the U. S. Army in the United Kingdom. There were two or three men to each room, central heating and no duties except our technical work, of which there was very little at that time. I doubt that my section averaged three hours a day on duty.

My room-mate was an engineer in civilian life and was taking some advanced correspondence work from I. C. S., and soon talked me into a couple of courses that I needed. We "scrounged" a table and bench and our room soon looked like that of college students. It is seldom that one ever has the opportunity tor unlimited reading, study and intelligent discussions. We took full advantage of the situation that winter. The movies changed three times a week on the post, we picked up some books in town and there were some fair books in the camp library. Darwin, Rutger's Mineralogy, H. G. Wells, Sinclair Lewis, and quite a few others were on our shelves, with a sprinkling of detective fiction for relaxation.

One morning, while searching out minute crinoids (ancestrial to the star-fish), in washings from Carlops, Scotland, with the aid of a binocular loupe, I turned to see an inspecting Major framed in the door-way. He must have been really shocked for he closed the door without a word or question.

Travel was difficult, especially to out of the way places, but a trip was finally arranged to Clitheroe and the day was rather pleasant. It ws necessary to change trains at Preston and at Blackburn I caught a bus, arriving in Clitheroe (N. W. England) about noon. The next bus out was at 3:15 P.M. so I quickly located Church Brow Road and so on to the quarry on foot. Luck was with me for on arriving at the quarry (limestone) a steep slope across the way was selected and very shortly two crinoid calices (bodies without the arms attached) were located on a limestone slab weathering a yellowish cast. It appeared that I was on the crinoidal exposure of a large bioherm. In the blue-grey marl I found about 150 specimens in two hours, most exciting. Most of them were Camerates ("box-crinoids") and some were very large beautiful things.

I rode double-decked buses back to Preston—the upper portion provided an excellent view of the rustic, beautiful country-side. This was my only trip to this famous quarry for we were alerted to rejoin our company and procede to the continent. Once again the "magic wand" touched me for I was assigned to go to G-45, a Depot about fourty-five minutes by train from London, and assist in taking three semi-trailer loads of Signal equipment to a depot in Paris. While waiting it was of course possible to slip into London.

Even though war-torn she was a majestic, sedate city. The British Museum of Natural History was of course closed to the public and most of their collections stored elsewhere, but Dr. H. Dighton Thomas was kind enough to receive me. Early in the war the geological wing received a hit and shortly before my arrival a V1 rocket landed just in front of the building, shattering almost every glass case in the Museum. This damage has proven a serious handicap against normal functions even yet.

A few days later we embarked at Southampton for the Continent.

OBSERVATIONS CONCERNING THE VOLCANIC ASH OF THE NEW VOLCANO PARICUTIN IN MEXICO

BY MAURICE B. ROSALSKY
College of the City of New York

On February 20, 1947, the new volcano Paricutin in the state of Michoacan, 200 miles due west of Mexico City, was four years old. Its activity still continues to the surprise of many American and Mexican geologists who anticipated an early extinction. They reasoned that since in this region there were several hundred volcanic cones generally from 200 to 800 feet in height, Paricutin would fit into this pattern and become extinct upon approaching this latter height. Moreover, both the older extinct cones and Paricutin possess in common the same kind of andesitic basalt, an indication that the magma comes from the same reservior. But, surprisingly enough, Paricutin reached the height of 1500 feet within eight months of its birth, and now is approaching 2000 feet in elevation above a base itself about 7500 feet above sea-level.

Not only have volcanologists found much to interest them in this closely studied birth and early years of a volcano, but the student of erosive phenomena may find much to study here also. The writer, who is interested in erosive phenomena, visited Paricutin and environs during September 10, 11, and 12, 1946.

First Observation: The dissection of the volcanic ash and the fact that the present day lava flows are flowing over ash reveals to the visitor that the great period of ash eruption was early in the short history of the volcano. This is confirmed by a statement of Dr. Parker T. Trask[1] that the greatest discharge of ash fell in one period of 36 hours early in April, 1943. This fall even covered Uruapan, 15 miles to the east, with 6 to 8 inches of ash.

Second Observation: About 3 miles northwest of Paricutin the writer saw some erosive phenomena involving this ash. It seems that this early ash covered a small extinct cone here to the depth of several feet. Wet-weather intermittent streams have cut many gullies in this loose unconsolidated material and, carrying the ash to the base of the cone, have been forced to drop the load as the current slackened on the flatter surface, forming a number of very symmetrical alluvial fans. Since little ash in recent months has fallen over this area to replenish the ash cover of the cone, much of the ash has been eroded off the cone. Consequently now, when the streams flow the slopes in wet weather, they are underloaded by the lack of ash. When they reach the previously formed fans they have the surplus energy to cut into and dissect the fans formed not many months ago. Thus in a short time in one place stream action, first of deposition and later of erosion, has yielded these striking dissected fans.

Third Observation: In most places near the volcano the ash forms a level plain 10 feet and more in thickness covering the former corn fields. Ten miles from the volcano the ash is much thinner and cornfields are already thriving in it (September, 1946), confirming Dr. W. F. Foshag's[2] statement, which he made when Paricutin was less than a year old, that the ash should make good soil both from the physical and chemical standpoint.

Fourth Observation: Intermittent streams have formed valleys up to about 50 feet in width and about 10 feet in depth in the ash plain around the volcano. The writer observed several places west of the volcano where the lava flows were controlled by these valleys. The lava flows actually veered and followed the valleys instead of continuing in their original direction. Dr. Parker D. Trask[1] has noted that Paricutin's lava moves most rapidly in the direction of greatest slope. This statement is confirmed by the valley control just cited. Dr. Harold T. Stearns[3] also affirms that basalt flows invariably follow stream channels. It would seem that this relationship should be taken into consid-

eration as a defense against lava flow invasions in densely populated areas. Perhaps, if large enough valleys were dug or embankments built in the vicinity of Etna, Sicily, and Mauna Loa, Hawaii, less damage would occur in the Catania to Messina and the Hilo areas respectively. Although the method of diverting lava flows by bombing has had good results in the Hilo area this seems to be less accurate a method than that of embankment construction.

Fifth Observation: At places in the ash plains around Paricutin where there is considerable original slope, beautiful dendritic drainage patterns have developed. A project of shooting a little motion picture film each day at the same place would yield a continuous record of valley development. A fine record of the competitive growth of streams, including the capture of main streams or tributaries by their more vigorous neighbors, would result from a few months' observation of these nonresistant deposits. For here in miniature in a few months could be observed processes which normally take many thousands of years. Of course, renewed ash falls would necessitate starting the cinematographic campaign all over again.

Sixth Observation: There are some fine examples of deep gullies which have developed in the ash in the four year period. A careful study of these gullies should yield quantitative data as to the speed of gully cutting by the ash which acts as the cutting tool. Such relationships as these are already being studied in detail by Dr. William C. Putnam[4] and associates under the auspices of the Geological Society of America. Dr. Putnam has noted that the speed of erosion by streams in the vicinity of Paricutin has increased since the birth of the volcano. He says that the down cutting has been accelerated by the utilization of volcanic ash as cutting and scouring tools. This increased erosion he notes has already resulted in serious damage to sugar cane lands at lower levels.

He goes on to say that in the geological past in regions of heavy rainfall, volcanic activity might also have encouraged rapid erosion as the result of the utilization by the streams of the fresh supply of volcanic ash. These statements come from a press release with no paper as yet published by Dr. Putnam.

The writer thinks that two additional factors should also be considered. In the first place, vegetation has been killed off by the fall of volcanic ash in an area of between 10 and 20 miles in diameter. Might not the increased run-off which must result from the absence of a soil cover be a factor in accelerating erosion? As Dr. William T. Twenhofel[5] pointed out, the physical erosion of the surface is encouraged by the destruction of the vegetable matter.

Secondly, might not the older volcanic ash from some eruption within the past few thousand years also have been released by the death of vegetation and thus contribute tools for the increased erosion? The writer saw many road cuts in older volcanic ash in which much slumping has taken place indicating a lack of induration. This was material which could very easily be cut away by streams when not protected by overlying vegetation and could aid in the erosion of down stream areas.

Seventh Observation: Walking over the Paricutin ash plains the writer observed a number of steep-sided gullies which are steep also at the headward extremity. These steep-sided amphitheaters are almost cirque-like in appearance. These gullies are without doubt working headward. Certainly they were not there originally. Gullies in New York State, for example, also commonly start with a small cliff at their headward extremity. In New York such cliffs and their continued maintenance could be explained as follows: Rainwater flowing down a fairly regular slope would find initial irregularities and would concentrate into a stream by the time the water had traveled a distance down the slope. This stream with far greater erosive power than the diffuse channels above would cut deeply into the soil starting at the point of concentration and form a gully. This gully would start at a miniature cliff, since the water would scour out the

underlying soil more easily than the top soil held together by the well matted grass roots. In some cases the headward erosion would be aided by the subsurface run-off called spring sapping or groundwater sapping. For Professor Douglas Johnson[6] pointed out that not only the surface flow in shallow channels, but also the groundwater issuing as springs in gully heads, plays an important role in the headward erosion of steep-sided gullies. Of course, conditions must be favorable for the undermining of the higher layers. Such conditions would be found in the above-mentioned case when now and then the overlying sod, much undermined, would collapse and thus cause the cliff to retreat uphill. This feature thus resembles Niagara Falls with its comparatively resistant limestone overlying the non-resistant shale. With the removal of the shale the undermined limestone collapses and the falls recede.

But why are the headward extremities of the gullies in the Paricutin ash also steep? Certainly there is no grass or sod to hold the surface together so that it could act as a resistant material. Photographs[2] of the ash taken right after an ash fall reveal that a person's feet sink into it as deeply as into mud. But in September, 1946, the writer observed that cars could travel over the three-year-old ash making but a slight impression with the tire treads. It is therefore likely that some process is at work hardening the surface. It would be some such effect as is sometimes seen in deserts due to the action of salts. During the dry season at Paricutin, water with salts in solution would rise through the ash carried by capillarity. The water would evaporate at and near the surface with a resultant precipitation of salts which, filling the interstitial spaces, would harden the mass. Such a resistant surface might well be a factor in the explanation of the steep headward extremities of the gullies around Paricutin.

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A Further Note on Purgatory Chasm, Mass.

BY JOHN WILEY
Lexington Rd., Lincoln, Mass.

Last summer I visited Purgatory Chasm, near Worcester, Mass., which was described[1] in the April, 1945, issue of *Rocks and Minerals*. I found there two minerals which were not mentioned in the article but which should be recorded. The minerals were beryl, green to grayish crystals in feldspar, and garnet, small crystals in feldspar.

[1]Purgatory Chasm, Massachusetts, by Joseph Stachura. *Rocks and Minerals*, April, 1945, p. 166.

Obsidian in Iceland

Iceland is noted for its fine obsidian which is quite common in the country. Near Torfa Yokul, in the southern part of the island, obsidian can be found in great abundance ranging from small pieces up to large blocks. The choice specimens are the lustrous deep black masses many of which have been exported to foreign markets where they were cut or trimmed and polished for gems, ornaments, etc. So beautiful is the obsidian from Iceland that it has often been called "Iceland Agate."

Hrafntinna is the Icelandic word for obsidian which translated means the "twinkling raven stone."

GEOLOGICAL HIKES IN LITCHFIELD COUNTY, CONNECTICUT

BY SAMUEL C. BROWN
Stamford, Conn.

According to the "Manual of the Geology of Connecticut" by Rice and Gregory, the highest portion of the State, 1200 to 1300 feet elevation or plateau, is located in the northwestern part, in which is Litchfield County. I have hiked over parts of the town of Goshen, which is located north of the central part of the county, and made the following notations. On the Boy Scout camp site which con ists of some 75 or 80 acres, located between Torrington and Cornwall on the Torrington and Cornwall road, I have noticed glacial markings and several exposed ledges and also a large partly exposed boulder of granite that contained a high percentage of Magnetite. The striations of these glacial markings are approximately N. W. and S. E.

Around the fields of this camp area numerous small moraines have been noted that consists of small cobbles to fair size boulders of granite, gneiss, and Stockbridge Limestone, in fact the largest boulder on the reservation is a much disintegrated one of this limestone. The dimensions of this boulder are about nine feet in diameter, another large one is on the road to the camp site; smaller ones are distributed over most of this area.

So far no eskers or drumlins have been seen in this area, nor have any good sand deposits. Dog Pond, a small body of water on the boundary of the camp site, appears to be formed by a glacier. On the shore of the camp site distinct remains of terraces show evidence of a much higher level of the Pond; also on the Bently Farm, east of the site, remains of an ancient lake bed with terraces and quite a few peat bogs are in evidence.

To return to glacial markings, quite a few distinct ones may be seen in this area of Litchfield County on Mohawk Mountain. The elevation of the mountain is about 1800 feet. This proves that the mountain was once covered by the big Ice Sheet that covered all New England.

As far as minerals found in the camp site section, they are all derived from drift material. In the Stockbridge Limestone good crystals of tremolite may be found. Complete crystals of muscovite occur in granite. Jasper, and several other specimens, may be picked up as loose pebbles. There are several ledges of gneiss partly uncovered by the Drift. The Stockbridge boulders were probably brought to the area by the Ice Sheet from the northern part of the state from Canaan or even as far north as Massachusetts or Vermont.

The writer has visited the location of the old Nickel Mines in Mount Prospect, Litchfield, Connecticut. But he has found nothing of importance except pyrite, limonite, and a slight trace of sphalerite. Specimens of pentlandite the ore of Nickel, were badly disintegrated, also likewise pyrrhotite.

The Potholes at Kent Falls, located on Route 7, were quite interesting. It is evident that the stream or large brook was much larger when these were formed.

Falkland Islands Bitumen Oil Fluorescent

Bitumen from the outcrops in the Falkland Islands of the South Atlantic is dull black, and has a specific gravity of 1.01. A heavy oil distilled from a sample is dark green in color and fluorescent. It is a different bitumen from the normal mineral, and resembles Canadian albertite; in fact, it is not a true bitumen.

Fluorescent Light for Drill Core Studies

The use of ultra-violet light has lately been extended to the examination and study of cores taken from the ground when drilling for oil. Very often the presence of oil can be detected by the fluorescing of minute deposits of oil several hundred feet above the oil sands. This lets the drillers and geologists know in advance that they are on the right track.

ROCK CANDY MOUNTAINEERS RIDE AGAIN

BY CARMINE J. VENUTO

On December 29, 1946, the Barbizon Hotel in New York City was the scene of a hilarious get-together of twenty members of the Brooklyn Pick and Hammer Club. To all of us it seemed like an enlarged edition of the good times we used to have on Saturday afternoons in the mineral lab of the Brooklyn Children's Museum, Brooklyn, N. Y., before the war scattered the membership to the four winds of heaven. This was the first reunion of the Club since the outbreak of the war. The guest of honor on this occasion was Jack C. Boyle who for 17 years has given much time and effort to the guidance and activities of the Club.

In spite of the inclement weather and the added disadvantage that many of the members had just arrived from out of town, the meeting got off to an early start. With each new arrival a shout of greeting and often surprise went up. Five years had certainly changed some of the fellows. It seemed only yesterday that we were running around in our knickers collecting minerals in and about New York City. Now many of the members have completed college, some are married and some have children. The change that had taken place in those few but important years was made even more dramatic when Irving Horowitz arrived with a folder of photographs and news items of the Club's past activities. Many were the chuckles and wise cracks invoked by the sight of these bits of "ancient history." We all had a good time bringing each other up to date on ourselves and relating some of our war experiences.

This informal meeting was followed by a sumptuous turkey dinner. At the close of the dinner, Leo Yedlin, who was master of ceremonies for the occasion, gave a brief and humorous account of Jack Boyle's career before he came to Brooklyn to teach mineralogy in the Children's Museum. He praised the excellent work Jack has been doing at the Children's Museum since 1929. Prior to that his activities had ranged from making false teeth to dishing our humour along with railroad tickets. Leo's humorous and thoroughly enjoyable talk was warmly received by all the members.

To the loud demands for "speech or else", Jack expressed his keen pleasure in the fact that all members of the Club had returned safely from the war. He depreciated the importance of his role in the accomplishments of the fellows, maintaining he had but admini tered the opportunities afforded by the Museum of which the members had diligently availed themselves. He counseled them that success in any of their undertakings would be measured by their diligence in perfecting themselves in every way possible.

Leo then presented to Jack, on behalf of the Club, an electric viewer for kodochrome slides. A vote of thanks was tendered Irving Horowitz, Danny Luchter, and Joe Kantor for the fine work they had done in arranging all the details for the reunion.

This was followed by numerous, interesting and humorous experiences related by the fellows. Alan Bergdhal, noting from Leo's talk that Jack Boyle's father had been a colonel in the Civil War, remarked that he had at last found the reason for the corn which Jack had so plentifully sowed around the mineral lab. No more vigorous applause greeted this "crack" than that from Jack himself.

A total of twenty Club members were present, two of whom brought their wives. In addition, Mrs. Boyle and daughter, Marie, were also present as guests of the Club. The occasion was so thoroughly enjoyed by everyone that it was voted to make it an annual affair.

Editor's Note: Mr. Boyle is authority for the statement that some of the Club members, while stationed in various parts of the world, had found there a number of interesting minerals. We hope that articles on these finds will be sent us for printing in *Rocks and Minerals*.

COLLECTING STAUROLITES AT BRASSTOWN, NORTH CAROLINA

BY FREDERICK A. STENBUCK, M.D.
Mount Vernon, N. Y.

Any Mineral Collector coming within a couple of hundred miles of the western tip of North Carolina would do well to make a point of visiting Mr. Fred O. Scroggs. Just make your way to Murphy, North Carolina, and ask the policeman at the booth on the square in the middle of town to direct you to Mr. Fred O. Scroggs at Brasstown. Murphy is on all the road maps, and Brasstown is on some, so local directions at Murphy may be desirable, but in case there is no officer at the booth when you get there, Brasstown is on route U. S. 64 a few miles southeast of Murphy. After you pass a state prison camp on the south side of the road, Brasstown is the next little clump of houses. Here one turns north on a dirt road a short distance to Mr. Scrogg's home,—and the center for information about staurolites, both local and from other localities. All of the above facts my wife and I found out on the way home from a trip to California last October.

While Mr. Scroggs is no longer actively engaged as a mineral dealer he still has a large collection of excellent North Carolina specimens, as well as Indian arrow heads and other curious local antiquities. But we had searched him out because we had read some of his articles on staurolites, and it was for staurolites that we had gone out of our way some hundred miles. His articles had described the locations, but as you know, reaching a locality from printed directions is not always easy,—last year's corn field may be in potatoes this year and lead one to the wrong turn. And sure enough, when I spoke to Mr. Scroggs about reaching the locality for staurolites it turned out that one of the landmarks mentioned in his articles,—a foot bridge across Brasstown Creek, was no longer present. However, he kindly consented to guide us to the spot, and we set off in company with Mrs. Scroggs, their daughter Barbara, and Mrs. Scroggs brother, Mr. Walter Arrant. (It was Sunday and the menfolks were not working).

Returning to route 64 we turned southeast until we came to the first vehicular bridge across Brasstown Creek. Just across the bridge we turned abruptly right, passing in front of a house built on the side of the hill. Unless the road from here on has been improved since we went over it, you had best park your car just over the bridge and go the rest of the way on foot, as we did. The road was new when we went over it,—it had just been carved out of the side of the hill by a bulldozer. Proceed along this road until it bends around to the left, passing behind a house. You will then find yourself going up the left side of a little valley through which wanders a small tributary creek to the Brasstown Creek. Across the valley you will see a tongue of land with a rounded end sticking out into the valley of the Brasstown Creek. This is Snake Ridge, and it is on this ridge that the staurolites are found.

We crossed the little creek and, with many scratches from the briars, got across the little valley. Then under, through or over a barbed wire fence, according to your age, weight and height. (The author bowed to two of these factors and went *under*). The ridge rises rather abruptly then, and you have to guard against a twisted ankle; up over the ridge we went and down the other side to an old road running along the side of the next valley. Up this road a bit, with your eyes to the ground, and watching the low bank of the road on the left. Here we came to an exposed spot of red clay, and for anyone with astigmatism this is the time to put on eyeglasses, for the ground beside the road and in the road is full of staurolites. They are smallish, about three quarters of an inch long, and are coated with clay. They are of the oblique twinned type, we did not find any true right angles. Occasionally a single crystal is found. Frequently interpenetrating pairs

of twins are present. You need not take any broken ones for there are plenty of good ones right on the surface!

After picking up a quantity sufficient for our needs (take a little, leave a little for the next fellow) we proceeded diagonally up over the ridge back to the side up which we first came, stopping at various places to scratch in the surface of the earth and uncover more staurolites. As we went up the hill the staurolites got larger but fewer, until we were getting them about two inches long. Topping off the collecting with a nice specimen of staurolites in matrix, we went back down the hill, under the barbed wire fence again, through the wild growth of berry briars, across the creek on stepping stones and back down the road to the car. The trip back was shortened by the interesting comments of the Scroggses on local minerals, hunting, farming, politics and social activities.

When we got back to the Scroggs home we spread out our loot and looked it over. This was accompanied by a discussion on staurolites from various localities, ways of cleaning them, and of preparing them for the tourist trade by boiling in oil, etc. The discussion was quite one sided, for we had come there to get information on staurolites, not to give it, so we listened rather than talked. Mr. Scroggs rounded out our day's collecting by presenting us with some of the beautiful crystals from Fannin County, Georgia. From staurolites the talk drifted into other minerals and it was after dark before we left with our specimens and the well laid foundations for many happy memories.

Once more I was impressed with the common bond that exists between mineral collectors. Here were we, total strangers to the Scroggses, and yet when our mission was explained they went out of their way to be nice to us, and took us directly to the locality which we may have spent a day in trying to locate, possibly without success. More of this spirit abroad in the world would make it a better place in which to live.

While I was writing this my wife was reading it over my shoulder, and she insisted that I must warn other ladies who go to this locality that while we did not see any snakes on Snake Ridge the place is awfully rough on hair nets and nylon stockings. She says that a bandanna for the hair, a shirt of smooth material to shed brambles, and blue jeans tucked into shoes should be the uniform of the day.

Rocks and Minerals Has Something!

Editor R&M:

I have cancelled all advertising in other magazines. An ad like the one appearing in this issue (Classified pages) was inserted in one of the new magazines and it did not bring even a single inquiry. This same ad was run in a well known magazine and it brought just seven replies.

My last year's small ad in *Rocks and Minerals* brought over one hundred letters which resulted in many very satisfactory exchanges. Letters from that ad are still coming in.

Rocks and Minerals has something that no other magazine of its kind seems to possess.

Robert Marie,
Revere, Mass.

Jan. 4, 1947

A Fine Magazine!

Editor R&M

I have added many very fine specimens to my collection through the ads in your magazine, both by open purchasing and trading. Keep the monthly as it is now and I'm sure that *Rocks and Minerals* will have a long, long life. It is a fine magazine.

Sgt. John O. Griesbach, U.S.M.C.
Camp Lejeune, N. C.

Feb. 16, 1947

Maroon Quartz

Several colorful specimens of maroon quartz from Brazil have been on display in the window of a steamship company at 26 Broadway, New York City. We understand that this colorful quartz was loaned by the Seaman's Bank, Wall and Pearl Streets, New York City, the latter having a mineral display at its main office. Maroon quartz is not mentioned in C. F. Herbert Smith's splendid book, "Gemstones," which is one of the best authorities on precious and semi-precious minerals.

TOMLINSON ON DIABASES

BY CHARLES A. BELZ

To the average enterprising mineral collector, "rock" is that encumbering furniture of a quarry that annoyingly gets in the way as we go about this alleged "pursuit of happiness." Piles of it to climb over, loose talus heaps to slither down, sharp edged slabs for the inevitable hack at one's shins, solid blocks to hammer at with a soul full of hope but a profund sen e of futility, dead weight to be toted home, and then cracked loose from something we think worthwhile and finally thrown away.

We give scant heed to the actuality that here, frozen in violent labor countless centuries ago, reposes the very mother that conceived, delivered, nurttured and sheltered those coveted specimens we so avidly seek.

Some of the most vexing of these are the diabases, which frequently form the matrix of the zeolites and associated minerals. That diabases in themselves can be interesting was ably demonstrated at the Jan. 2, 1947, meeting of the Philadelphia Mineralogical Society by Mr. W. Harold Tomlinson, whose talk "Minerals of the Different Phases of the Triassic Diabase" performed a clinical autopsy on this important class of Rock. It would be difficult to find anyone better qualified to speak on this subject. In the preparation of thousands of thin sections, he has had ample opportunity to observe their mineral organization and has devoted many hours of study to interpret their meaning.

Mr. Tomlinson described Triassic diabase as the dark colored igneous rock intruded into the Triasic shales and sandstones, the magma rising from great depths below the earth's granitic shell. Concerning a divergence of opinion regarding the origin of certain rock types, Mr. Tomlinson finds evidence to support the theory of differentiation within a parent magma, and can also produce substantial evidence to buttress the arguments of those who hold that rock types are derived by assimilation of foreign material by the parent magma Mr. Tomlinson's study of the Triassic diabase has been sufficiently extensive to preclude a bland acceptance of any one school of thought. To quote his conclusions: "I believe that this magma, in the early stages of its history when still at a high temperature, assimilates small quantities of the formations it contacts. At a later stage during solidification, it forms differentiates."

The Triassic diabases and basalts occur in a narrow belt extending from New England to Georgia corresponding in area to that which was covered by the Triassic Sea. Our speaker ventured the opinion that the magma rose during Triassic time through the fissures that resulted from the crustal movements which drained that sea.

The various phases of this diabase given by Earl V. Shannon in his description of the exposure at Goose Creek, Va., are as follows:

Normal Diabase
Albitic pegmatite
Diopside-hornblende veins
Diabase pegmatite
Diabase aplite
Diabantite seams

All of these types can be found in any of the larger masses of the formation. The largest percentage of the mass is the "Normal Diabase," a medium grained, dense rock composed essentially of about equal parts of labradorite and augite intercrystallized. The feldspar is usually euhedral, the augite sometimes euhedral more often anhedral. In addition there is a small percentage of an opaque black titania, probably an intergrowth of ilmenite and magnetite, and up to 6% of fine grained interstitial material consisting of feldspar, usually albite, quartz, a little apatite, and perhaps a few flakes of biotite bordering the interstitial material. That here is an example of differentiation can be inferred from the fact that the normal diabase contains about 94% high temperature minerals, and 6% of low temperature material usually associated with granites and peg-

matites, indicating a possible difference of 200 degrees between crystallization of the basaltic minerals, and the final crystallization of the interstitial granitic minerals.

If the granitic material content rises to 10% the grain of the rock becomes much coarser, and a diabase pegmatite results. This phase is characterized by coarse euhedral crystals of labradorite and augite, the percentage of titania becomes much higher, and flat plates of ilmenite are abundant. Apatite is often in crystals large enough to see with a hand glass.

In some pockets a core is formed of albitic pegmatite—a coarse grained phase which blends into the diabase pegmatite although the change in mineral composition is abrupt. It is composed chiefly of albite and quartz with a variable but small percentage of ferromagnesian minerals, usually diopside or hornblende or biotite. This albitic pegmatite crystallizes from a magma rich in soda and silica, a watery magma working itself upward through the normal diabase. These three types are clearly differentiated from a parent diabase magma, separated during solidification.

On the other hand the origin of the remaining three phases may be open to some question. They may be differentials or they *may* derive from a magma source outside the diabase. Positive proof must depend on further study.

The aplites are fine grained rocks composed of albite and quartz with a few accessory minerals. They occur in narrow dikes with straight walls, follow joint planes, and may even cut across the three previous phases—are therefore younger.

The diopside-hornblende veins occur in joint planes and are about the same stage as the aplites, whereas the diabantite seams occupy fault planes which have slickensided. They are composed of chlorite formed from the crushed material of the slickenside.

The exposure at Safe Harbor, Lancaster Co., Penn., affords somewhat more substantial evidence of assimilation by the basaltic magma. The contact here is near the base of the Paleozoic, hence near to the main reservoir from which the magma was ejected. The Paleozoics here are tilted almost vertical, have been broken directly across their bedding, and are shot through with quartz veins and small diabase stringers. The metamorphism is much more extensive than could be accomplished by a dike of the size actually exposed. There is every reason to believe that a large mass of basaltic magma at high temperature has been injected and lies not far below the exposed surface. Just west of the diabase dike at the extreme north end of an old abandoned quarry, there is an exposure of a fine grained buff colored rock, obviously an igneous intrusive. It appears to have been a very fluid watery kind of magma that has penetrated through the schists and sandstones along their bedding planes. Thin sections how the mineral composition to be about the same as the diabase aplites, but in addition, and this is important, carries many inclusions such as angular quartz fragments, often of large size, bits of schist and other fragments. Mr. Tomlinson calls this material granophyre, and proposes the following explanation of its origin: The area according to generally accepted opinion is underlain by granite, some basaltic magma found its way through this granite, and it is also likely that a *large* mass of it rested against the granite. Now while granite solidified at 500 degrees, the basaltic magma resting against it could hardly have been at a lower temperature than 1100 degrees. Something was sure to happen in this area of contact, and Mr. Tomlinson believe granophyre to be the result. As further evidence of assimilation by high temperature magma, Mr. Tomlinson and his companion Mr. William Leigh Smith, found at Safe Harbor a block of diabase showing unusual pipes. Investigations later disclosed that these pipes were formed by inclusions of some rock ascending through the diabase leaving a well defined trail behind them. They had a rounded head of material quite similar to the granophyre, surrounded by a hybrid rock composed of albite, biotite and cordierite. Outside this zone of hybrid

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GEM VILLAGE
America's Only Rock Colony

BY LOTTIE M. NEELY
Durango, Colorado

In my travels I have often been asked "Have you been to Gem Village, what is it like, do you think it will be a success?"

For the benefit of our readers, I will try to tell you what America's Rock Colony is like.

In southwestern Colorado, 2 miles west of Bayfield and 18 miles east of Durango, is a miniature valley completely surrounded by timbered hills. Backed on the north by the towering saw-tooth crags of Granite Peaks, to the westward is the beautiful snow-capped La Platta mountains, south and east stretches the long mesas of the H.D.'s

This little valley, covering about one and a half square miles, is cut in half by U. S. Highway 160, running east and west across it. Running from north to south is a cool clear streamlet of mountain water. The soil in the valley is deep and black and very rich.

In 1941 this valley was bought by Frank and Grace Morse. The Morses were mineral collectors who owned and operated the Colorado Gem Company in Bayfield for years. Unto this couple was borned the brilliant idea of organizing a rock colony. Like other good ideas the news spread quickly and soon lots were staked the full length of the highway on both sides of the road. These lots were 100 feet front by 300 feet in length. To-day they are practically sold out and numerous back lots are sold.

The scarcity of material during the war slowed up the growth of the village. The businesses operating at this writing are the following:

The Colorado Gem Company, wholesale and retail, is owned and operated by Frank Morse. Mr. Morse found that his showroom was inadequate for last year's trade and he has now doubled his display space.

The Gem Exchange, (formerly of Lake Bluff, Ill.) is both wholesale and retail, and operated by Mr. and Mrs. S. N. Green. The Greens are now building a new annex on their shop.

E. E. Shipley operating The Shipley's Mineral House which is strictly wholesale.

Wilfred C. Eyles is producer of the famous "Streamliner" diamond saws.

Bob Taylor runs the Taylor Lapidary Shop and does private and wholesale cutting.

L. G. Fahrion of Miami, Florida, has his residence and shop practically completed and will open in the spring.

There are quite a number of collectors and artists that have built and others are now building private homes. Quaint log houses, Spanish pueblos and rustic cabins make up Gem Village to-day.

Several business houses plan construction in the spring. The application has been made for the post office. The land has been reserved for the site of a large community hall which, I understand, will contain the Village Museum as well as booths for private displays. There are plans for a park and a large lake, the lake to be stocked with fish and reserved for swimming, boating and fishing for the residents of the Village.

The Cemetery site was selected by Mrs. Morse, herself; and to-day her remains lay at rest beneath the shade of the pinons, in the only grave in the Village Cemetery. Grace Morse passed away the 29th of March, 1946. She was a wonderful women, a friend indeed.

The altitude in this area is approximately six thousand feet. The summers are cool and pleasant. Yes, it does snow in Gem Village. There is not the cold harsh winds some people associate with the word snow. Most of the winter days are bright and sunshiny and when it does snow, it is usually quiet and the big flakes comes tumbling down.

WHAT ABOUT BUILDING MATERIAL—? The local saw mills turn out millions of feet of pine lumber, cut from the pines of the native forests or those same forests will furnish you logs for

log cabins. The Pine River in Bayfield supplies beautiful cobblestones for rock houses.

WILL THE SOIL PRODUCE—? Yes, fine fruit and vegetables, hay and grain. The soil is very productive. When you buy land in the Village, the water rights goes with the land, your irrigation water is free.

HOW'S THE FUEL SITUATION—? There is lots of wood and coal is plentiful, being mined in the local coal mines of the vicinity. There are some gas wells, but up-to-date gas has not been piped to this locality. The Village has R. E. A. electric service and Mountain State Telephone.

ARE THERE ANY LOTS LEFT—? Yes, a few of the original division along the highway and the second sub-division is now being opened. The streets will be graded tho, and the lots will be ready to sell by the time this goes to press.

WHAT DO LOTS SELL FOR IN GEM VILLAGE—? Lots are selling at $150 and up depending on locations. The back and adjoining the home sites sell for $100 and up per acre.

WHAT ARE THE OPPORTUNITIES STILL OPEN—? I understand there are some sites that are reserved in the business area, that are not sold at this date, such as: The site for the grocery and market, the tourist court location and a few business lots.

There isn't a gold or silver-smith in the Village, and commercial cutters are badly needed.

There are a few cabins built for the sole purpose of housing the future residents, until such a time as they can build their own home or business.

Any one interested in the new subdivision now being opened or opportunities in Gem Village can obtain information by writing to—E. E. Shipley Box 232, Bayfield, Colorado, or Frank Morse, Box 127, Bayfield, Colorado.

WHAT DO I THINK OF GEM VILLAGE—? Having been to Gem Village numerous times at various seasons of the year, it seems to me to be a very ideal spot to live. It hasn't the heat of the deserts, or the humidity of some states or the intense cold of higher altitudes.

It is nicely located, being only 18 miles from the adequate shopping center of Durango, whose population is around 7,000.

For Collectors, Gem Village is in the very heart of the collecting territories of southwest Colorado.

To the Artists, the wonders of Wolf Creek Pass, the scenes of Granite Peaks, and the grandeur of our lakes are beyond my words.

To the Hunters and Out-door Men and Women, our mountains on the western slope abound in big game, elk, deer and bear and the lakes and mountain streams have plently of fish.

The fishing and boating resort of Pine River Dam is 15 miles from Gem Village.

It just now occurred to me that the people of Gem Village are more fortunate than you or I. For after all, life should be made up of the finer things, like those clean pleasures that the earth hobbies bring. Think of the thrill and the long hours of enjoyable conversations when some collectors or excursion group bring in some new mineral specimens, or those hunting and fishing pow-wows. Or just the pleasure of living in a community where all of the people had some thing in common.

DO I THINK GEM VILLAGE WILL BE A SUCCESS—? If you were going up town to buy a new suit or new dress—Where would you go? You would go to the one place that had the best material and offered the largest selections to choose from. If you were a tourist traveling the highways where would you go? You would route your trip to the places that had the most of that particular thing that you were interested in. Gem Village is a rock colony, the only one in the world, and whenever its stockpiles become greater, and its displays fabulous and its gem cutters of the best, it is then that the buyers of the world and the tourists of

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LOCATION FOR JASPER LOVERS

BY T. ORCHARD LISLE

About 15 miles along the Bay Shore highway running from San Francisco to San Jose in California, and less than a quarter-of-a-mile off the main pavement at San Mateo, there is a small eucalyptus-covered peninsula projecting into the South Bay. At least, it was covered with these Australian trees until the U. S. Maritime Commission built a marine cadet corps training school there about the middle of the war with Japan. The land is known as Coyote, or San Mateo, Point, and is a distinctive landmark when driving along the road in either direction. It is practically all jasper, and anywhere you scratch the top soil you run into this solid red and multicolor rock.

On several occasions during 1941 and 1942 I visited this location, which is quite a beauty spot, backed by the coastal range of hills and overlooking the Bay with Mount Diablo not far from the other shore. Incidently, Mount Diablo is an extinct volcano, and has a quicksilver mine on its slopes. Occasionally, some mineral specimens can be obtained there. One curious piece of stone I found there was a pebble about the size of an Idaho potato, that was semi-translucent and marked all the way through with what might have been dendrites. I gave it to a rock-cutting friend; but never ascertained just what it was, so I called it leopard stone. I was looking for cinnabar crystals, but did not find any attractive specimens at the mine dumps.

To return to Coyote Point. On several occasions during 1941 and 1942 I visited the location, which then was a picnic area and undeveloped beach adjoining a golf course. The bathing beach had no sand, but was composed mostly of broken jasper covered with black or green slimy marine growth plus mud, which had broken off from numerous outcrops by exposure to the atmosphere and by the action of waves. At low tide I picked up numerous pieces from which I had cabochons made, although quite a lot of the material lying around is of poor quality and not dense enough for good polishing. Much of it is brick red with lines running through in various patterns. Where the exposed jasper projects into the water at high tide it is partly decomposed, or deteriorated to the point of being full of cracks and it fractures easily at the cracks. To reach the better grade of material some heavy sledge hammer, crowbar and chisel work is necessary. Back from the water where the jasper is even more solid, dynamiting probably is essential. But, I presume that ample fine-grade material was stacked up somewhere near by when the contractors for the Maritime Services were levelling and excavating. Possibly the excavated rock was used for the ship jetties; but I haven't visited the Point since all the buildings were erected; in fact, I have not returned to the Pacific Coast since the summer of 1944. Therefore, I must leave it to others to make an investigation. If they do so, let's hope that they will write the result for *Rocks and Minerals*.

One cabochon that I had cut and polished is as pretty as any jasper I have ever seen, and three times I have visited the famous orbicular jasper locations at Morgan Hill, 60 miles farther South on the same highway. This San Mateo cabochon is mostly red brown with an irregular patch of chocolate brown, and running through are tiny and uneven veins of chalcedony edged with black. This particular piece took a very high polish and is free of hair cracks. Two matched cabochons are dark brown with an even vein of pale blue chalcedony forming "cats eyes," although there is no movement of light reflection. Another is a drab yellow with a brown vein. There is one having a mixture pattern of yellow and brown jasper, the pattern being edged with a darker brown, while all over the surface are minute veins of pale blue chalcedony. Another "cats eye" is formed of yellow jasper with a narrow vein of white chalcedony.

One day while on the beach looking

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WORLD NEWS ON MINERAL OCCURRENCES

(Bureau of Mines **Mineral Trade Notes**, Dec. 20, 1946)

I. METALS

COBALT

Japan.—Only a small quantity of cobalt was produced in Japan before 1938, domestic requirements being imported in the form of cobalt chloride and special steels containing cobalt. After 1939, the Japanese, in preparation for war, made an intensive search for domestic sources of cobalt, but no important deposits were found. A list of known cobalt occurrences in Japan is given below:

Mine	Location	Kind of ore	Geology and ore deposits
Naganobori	Ota-machi, Mine-gun Yamaguchi	Cobaltite	Contact deposit between Paleozoic limestone and granite porphyry.
Yakuoji	Ayaki-machi, Mine-gun, Yamaguchi	Smaltite	Vein in granite.
Besshi	Nii-and Uma-gun Ehime	Cobalt-bearing pyrite	Conglomerate in schist.
Shiratski	Okawa-mura, Tosa-gun, Kochi	Cobalt-bearing pyrite	Conglomerate in schist.
Takakoshi	Miyama-mura, Oe-gun, Tokushima	Cobalt-bearing pyrite	Conglomerate in schist.
Higashiyama	Higashiyama-mura, Oe-gun, Tokushima	Cobalt-bearing pyrite	Conglomerate in schist.
Ikuno	Ikuno-machi, Asago-gun, Hyogo	Cobaltite	Vein in liparite.
Oeyama	Yosa-mura, Yosa-gun, Kyoto	Cobalt-nickel-bearing chlorite	Residual deposit in serpentine.
Iimori	Afuzu-mura, Naka-gun, Wakayama	Cobalt-bearing pyrite	Conglomerate in schist.
Sanyo	Otsuga-mura, Nishi muro-gun, Wakayama	Cobaltite, glaucodot	Veins in Mesozoic shale and sandstone.
Dogatani (Kuzukawa)	Totsugawa-mura, Yoshino-gun, Nara	Glaucodot	Vein in Mesozoic slaty mudstone.
Kune	Sakuma-mura, Iwate-gun, Shizuoka	Cobalt-bearing pyrite	Conglomerate in schist.
Tenryu	Yaekouchi-mura, Shimo-ina-gun, Nagano	Cobalt-bearing arsenopyrite	Massive deposit in gabbroic rock.
Horai	Horai-mura, Kitahoma gun, Yamanashi	Cobalt-bearing arsenopyrite	Network and disseminated deposit in granite.
Tano	Omishi-machi, Tano-gun. Gumma	Cobalt-bearing polydymite	Disseminated deposit chiefly in serpentine.
Chiyogahara	Otsuho-mura, Higashiiwai-gun, Iwate	Ferro-cobaltite	Vein in sandstone.
Horoman	Shamani-mura, Shamani-gun, Hokkaido	Siegenite, carrolite	Disseminated deposit or vein in amphibolitic gabbro.
Hiroo	Hiroo-mura, Hiroo-gun, Hokkaido	Unknown	Deposit in norite.
Hitachi	Hitachi-machi, Taga-gun, Ibaragi	Cobalt-bearing pyrite	Conglomerate in schist.

The Naganobori mine is reported to have a reserve of 120,000 metric tons of ore averaging 0.1 percent cobalt. Production of concentrates between 1941 and September 1945, when the mine was operated, was only 392 tons. The mine, comprising five deposits, has been worked intermittently for copper ore. Cobalt was discovered in 1908 but was regarded only as a mineralogical curiosity. About 1932, the mine was transferred to the ownership of the Nippon Cobalt Mining

Co., which held title until 1943, when the Mitsui Mining Co. assumed ownership. The Imori, Naganobori, and Hananoyama deposits each consist of a single lens. No information is available on the Ogiri deposit, which has been abandoned. The Eboshi deposit comprises five irregular ore bodies—the Shin-nishi, Nishi, Main, Higashi, and Shin-higashi. The Naganobori Hananoyama, and Ogiri deposits have not been worked since the mine was acquired by the Mitsui Mining Co. in 1943. At the Eboshi and Imori deposits, copper and cobalt ore containing 3.5 percent copper and 1.2 percent cobalt was being mined in April 1946. Most of the mine workings at the Eboshi and Imori deposits are underground, but there is a "glory hole" on the outcrop of the Eboshi deposit.

The *Sanyo* mine, near Otani, comprises six main veins and several small subsidiary ones, all of which lie within a rough square about 1.5 kilometers on a side. Four of the main veins are said to be exhausted. Cobalt was discovered at the Sanyo mine in the fall of 1940 or spring of 1941. The mine is owned and operated by the Nippon Cobalt Co. and has produced 392 tons of concentrates between 1941 and 1945. Operations at the mine are carried on underground by hand labor. The crude ore is hand-picked to produce a shipping grade containing 1.8 to 3.0 percent cobalt, which is transported by truck to the railroad at Esumi and sent to the Naoshima mill of the Mitsubishi Ofunadenki Co. It is roughly estimated that reserves are about 2,000 tons containing 1.0 percent cobalt.

The *Taisho* mine, 20 kilometers north of Shingu, consists of 6 quartz veins within a rectangle roughly 10 by 1 kilometers. The ore is cobalt-bearing arsenopyrite averaging 0.6 percent cobalt. Hand-picked ore averaging 1.0 percent cobalt was transported by auto-tricycle to Awada station. During the war, a power line and dressing plant were under construction, but were never completed.

Dogatani mine, about 18 kilometers northwest of Shingu, was discovered in 1941. All openings are underground, and all work is done by hand labor. The ores were hand-picked and sent to the Naoshima and Yokkaichi refineries. Estimated ore reserves are said to be 9,614 tons of ore averaging 0.85 percent cobalt. (Report No. 54, Natural Resources Section, GHQ, Supreme Commander for the Allied Powers. Prepared by T. G. Andrews, Scientific consultant, Mining and Geology Division.)

IRON

Union of South Africa.—The principal source of iron ore in the Union of South Africa is the Thabazimbi (Vliegeport) deposits, which occur as lenticular bodies of high-grade hematite on both sides of the Crocodile River, Rustenburg district, Transvaal.

MERCURY

Union of South Africa.—The entire output of mercury in the Union of South Africa is from the Monarch mine in the Letaba district. Production, local sales, and exports since 1944 are given below, in short tons:

	1944	1945	First quarter 1946
Production	34	32	5.7
Local sales	9	16	3
Exports	17	41	6

Most of the mercury exported was shipped to India, the rest going to Australia, Iraq, Persia, and African countries. (Minerals Attache William O. Vanderburg, Pretoria.)

VANADIUM

South West Africa.—The South West Africa Co., Ltd., operating the Abenab and Abenab West mines about 20 miles north of Grootfontein, is the only producer of vanadium concentrate in South West Africa. Concentrates from the Abenab mine average about 19.75 percent V_2O_5. The Abenab West mine under development, is one-quarter mile southwest of the Abenab mine, and, unlike the latter, the vanadium minerals, descloizite and vanadinite, are associated principally with lead minerals such as cerussite and anglesite.

In the past, the German-controlled company, Otavi Minen und Eisenbahn Gesellschaft, al o produced a low-grade

vanadium concentrate, but this property has been inactive in recent years.

During the first quarter of 1946, 1,190 long tons of vanadium concentrates were produced and 900 tons exported to the United Kingdom, compared with 1,020 and 995 tons during the first quarter of 1945.

(Minerals Attache William O. Vanderburg, Pretoria.)

II. INDUSTRIAL MINERALS

ASBESTOS

Canada.—The output from the rich asbestos mines in the Thetford-Black Lake-Broughton south of Quebec city continued to play an unobtrusive but vital role as the greatest world supplier of that mineral since 1878. The Canadian deposits are the largest known in the world. The asbestos of Quebec is entirely of the chrysotile variety found in areas of serpentinized rock. Other occurrences in Ontario and British Columbia of chrysotile and amphibole asbestos which have long fiber either too harsh or too weak to meet world needs are not being operated at present. Trial shipments of some of these deposits from Calabogie, Ontario, and Val d'or, Quebec, in 1944 for use as electric insulation and acid filters has not led to the opening of these sites for commercial use. Most of the output consists of vein fiber obtained from ¼ to ½ inch in width, although veins exceeding 5 inches do occur in some places. As the fibers run crosswise of the vein, the length of the fiber is determined by the width of the vein. Slip fiber, occurring in fault planes, comes from the East Broughton area. Recent hand-core drillings to depths greater than 1,700 feet in the Thetford district have revealed almost unlimited reserves of fiber comparable in quality to that being taken from the present workings by open pits or the "block-caving" method. The Asbestos Corporation, which originated this latter method at its King mine in 1934, remains the largest single operator. Other mining firms in the Thetford or Coleraine areas are Johnson's Co., Bell Asbesos Mines, Ltd., Canadian Johns Manville Co., Nicolet Asbestos Mines, Ltd., and the Quebec Asbestos Corp.

Generally speaking, the postwar demand for asbestos has been at least as great as during wartime. As the United States produces less than 5 percent of its needs, South Africa and Rhodesia provided the bulk of its long-fiber grades, and Canada supplied most of its requirements for the short-fiber non-spinning varieties.

(Third Secretary of Embassy Paul P. DuVivier, Ottawa.)

GRAPHITE

Kenya Colony.—During the course of his geological survey of the Mtito-Andei-Tsavo area, Dr. Parkinson discovered an extensive belt of graphite gneisses west of the confluence of the River Tsavo and the River Athi, near Tsavo station on the Kenya-Uganda Railway. Although the gneisses are low-grade, several considerations suggested that they were worthy of more detailed examination. Preliminary work had shown that several graphite bands are present, and that the group extends at least 15 miles. Bands containing enough graphite probably to be workable appeared to range from 20 to 50 feet in thickness, so that adequate quantities of material for large-scale operations could be anticipated. Other conditions favorable for mining operations are ample perennial water supplies available from the Tsavo River; the deposits are close to the railway station, which is only 136 miles by rail from Mombasa; and the material appears to contain no white mica and little dark mica, the chief gangue materials being quartz and feldspar. At one locality, a graphite-quartz vein crosscutting the gneisses was found. The graphite in it is massive and made up a considerable part of the vein, which, however, is of too restricted extent to be of more than mineralogical interest.

Further investigation of the deposits was considered advisable, but Dr. Parkinson unfortunately was compelled to relinquish his appointment, owing to ill health. However, field work was carried on by a prospector in the northwestern angle of the Tsavo-Athi confluence, as that is the most advantageously situated portion of the belt. The graphite-rich

horizons were traced and mapped, and several cross trenches were dug to a depth of 10 feet for sampling and to determine the width of the bands.

The investigation revealed the presence of eight graphite-rich bands, the strike of which was found to be generally about N. 25° W., and the dip steep to vertical. Some bands were traced continuously for 2 miles. Over much of the strike, the overburden was 1 foot or less thick, and in many places the gneisses were exposed at the surface. At other places they were decomposed to depths up to 6 feet and yielded friable material. At greater depths, blasting was necessary to penetrate the rock, although it was obvious that it would be readily amenable to crushing. By aneroid it was determined that the highest parts of the bands varied from 20 to 240 feet above the river beds.

In all, 15 trenches were excavated, and samples, taken in horizontal cuts over lengths of 10 feet, were obtained from ten of them. The samples were crushed, the graphite was floated off, and the approximate percentage of carbon in the concentrate was determined.

The extractable graphite in samples taken at different depths (up to 50 feet) from the ends of 10 trenches ranged from 4.75 to 8.12 percent at the east end and from 4 to 7.9 percent at the west end. The weighted over all average value was 5.8 percent.

Examination of thin sections by Dr. C. S. Hitchen disclosed that the principal constituents of the material are quartz, feldspar, and graphite, the latter in characteristic flakes, some of which were 5 mm. in diameter. Subordinate biotite, some of which is bleached, was noted, as well as minute quantites of sericite. The feldspar was found to be the potash and soda-lime varieties. Most of it was fresh, but a minor part was affected by kaolinization, which had spread along cracks and cleavages. Zircon is present as an accessory.

(Vice Consul Robert B. Houghton, Nairobi, Kenya Colony, East Africa)

NEW LONDON COPPER MINE, MARYLAND

BY VERNON J. MILLER, 2120 Wilhelm St., Baltimore 23, Md.

Located just west of the town of New London, in Frederick County, Maryland, is the now idle New London Copper Mine. It is the southern-most of the copper mines in the belt which extends from New Market to Taneytown. New London is about 25 miles northwest of Baltimore and about 8 miles east of Frederick, the capitol of the county.

The mine is off the road in a weed-covered field, so that it could be missed easily by one not familiar with the country. A red brick building at the side of the road forms an excellent landmark for locating the property. A few feet from this building is a small dirt path that leads to the mine. A visitor can also obtain directions at the general store, just over the wooden bridge, in New London.

History

The following history was obtained from Mr. Clarence Cashour, of Baltimore, whose sister-in-law is the present owner of the mineral rights:

The mine was discovered over one hundred years ago; the discoverer is unknown to Mr. Cashour. It was worked at intervals until about thirty-nine years ago, when it was abandoned permanently.

The shaft went down two hundred feet to the first level and farther to other levels. The levels now lie under various parts of the country surrounding the mine, including several roads. The mine was closed due to water and the fact that the ore body played out. At one time a vein six to seven feet wide was discovered, but it soon played out.

At one time there were many mining engineers engaged here. One fellow

named Johnson, a drinking man, blew out several boilers and left soon after. Mr. Husted, Mrs. Cashour's husband and a famous mining engineer in Mexico, was the last one employed here. When the deposit was finally closed, many people lost large sums of money. It was at this time that Mrs. Cashour obtained the mineral rights which she still holds.

No electrical devices were employed. Instead, the ore was blasted and hauled up in buckets. It was then separated on six tables, after which it was ground into a fine powder and shipped in ninety pound sacks. The ore was hauled by horse and wagon teams to Monrovia where it was shipped on the railroad. Some of the ore may have been sent overseas to England.

Nothing but the caved-in shaft and several concrete foundations, along with the small dumps, remain to mark the site. The dumps are overgrown, and the shaft is being used as a dump. Only a small dirt path yet leads to the mine.

Geology

According to *Minerals of Maryland*[1] "the ore body was contained in a very closed grained marble surounded by shale similar to other limestone outcroppings in this area."

Mineralogy

Minerals found at the mine are:

Bornite—

Calcite—orange

Chalcocite—in various rocks

Chalcopyrite—

Limonite—massive and as pseudomorphs after pyrite

Malachite—veins in various rocks and as crystalline radiations. The author found one such specimen during a recent visit.

Strontianite—

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[1] *MINERALS OF MARYLAND*, by Charles W. Ostrander and Walter E. Price, Jr., Natural History Society of Maryland, Baltimore, Maryland—1940, p. 46.

The old overgrown dump at the New London Copper Mine. The author is seen collecting on top of the dump.

ANSWERING A LITTLE GIRL'S REQUEST

Charles A. Belz, the very efficient Secretary of the Philadelphia Mineralogical Society, not only writes remarkable minutes but remarkable letters as well. Below is his reply to a little girl who wanted to know how to get started in collecting minerals. This little girl, Rhoda Sifry, resides at 50 Gouverneur St., New York 2 N. Y.—The Editor

Dear Miss Sifry:-

I must apologize for the long delay in answering your note to the Society. This is partly due to the circumstance that our Society meets at the Academy only once a month, and mail is usually not forwarded to me, but held until the next meeting. I will assume responsibility for most of the delay, however, because I have been sort of "sitting on" your note, wondering just how I should answer it.

You ask for "any material or information available on the subject of Mineralogy." One hundred and fifty years ago, this would have been a simple request. The Science of Mineralogy has grown up quite a bit since the time when it was understood to mean merely collecting unu ual "stones" and roughly grouping them according to content such as iron, or zinc, or copper, or whatever else might be recognized. The scope of Mineralogy is now so great that the average text-book treats the subject under the general headings of Crystallography, Physical Mineralogy, Chemical Mineralogy, Occurrence of Minerals, and Descriptive Mineralogy, and under each general heading there are many defferent phases to the study of minerals to mention only a few such as Micro-chemistry, Blow-pipe analysis, X-Ray and Spectrum analysis, Optical mineralogy and the study of thin-sections, the genesis of minerals, the modes of occurrence, the industrial applications, and economic importance of minerals, etc. etc. etc. In each of these fields there are specialists who are devoting their lives to one particular aspect of the subject, and likewise in each field there is an extensive and evergrowing literature. Perhaps you understand now why your request is such a staggering one.

This Society, as such, does not publish any material, and while some of our members privately write papers for scientific journals bearing on their research work, I would not know what to send you. However, on the presumption that you are new to the subject, let me hasten to assure you that there are thousands of mineral collectors all over the world who spend their leisure time in quarries, and clawing over mine-dumps with picks and hammers collecting specimens, others who buy and trade,—all of them love their collections, and find mineralogy a fascinating and all-absorbing hobby. A great many of them, when they began, did not know one chemical symbol from another.

Interest in minerals can range all the way from con idering a collection as you would a stamp, or a match-cover collection, to making a serious study of the subject, a study which can take you into mathematics, chemistry, the physics of light, fluorescence, heat, magnetism and electricity all the way up to the last word written on nuclear fission. It is this tremendous breadth of scale, I believe, which is accountable for the great number of enthusiasts, and for the intense manner in which they follow their hobbies. Verily, a rock-hound is far worse than a golf-fiend or a baseball fan. All you need do is to attend a session where two or more such addicts get together. There may be famine in India, the papers may be reeking with the latest love-nest murder, the industrialists might be wrecking the country, the unions might be wrecking the country, the politicians might be outdoing them both, there may be a blizzard raging outside, the temperature may 120° in the shade, the Martians are landing in New Jersey, and the hou e is on fire, but what do you hear?—"I want to show you some gorgeous Malachite I unearthed at Wheatley last Sunday" or "they just had a new blast at Perkiomenville, and look at the Natrolite that was exposed," and so on far into the night.

There are several books on Mineralogy for beginners. One very good one, very

interesting, most readable, and one you can understand even without a Science Degree is "Getting Acquainted with Minerals" by George Letchworth English, published by McGraw-Hill Book Co. Another is "Field Book of Common Rocks and Minerals" by Frederick Brewster Loomis and published by G. P. Putnam's Sons. A very excellent monthly magazine, very popular with mineralogists and collectors is published right in your State. It is ROCKS AND MINERALS published by Peter Zodac, of Peekskill, N. Y.

One of our members is Curator of Minerals at the Brooklyn Children's Museum, where they have a very fine collection. He is Mr. J. C. Boyle, a very pleasant person, and I am sure would be most willing to give you any help in your problems.

I don't know whether this is any kind of an answer to your request. I would be only too happy to give you all the assistance I can in your approach to a new adventure. The Science of Mineralogy is a structure before which one stands in awe and reverence,—it contains an unbelievable number of rooms of great variety, big rooms and little rooms, some rooms you can see by looking through windows from the outside, others you can see only when you go inside the buildings, and hunt tediously through many unmarked corridors. There are all kinds of people who live and work and play in this edifice, from distinguished scientists intensely absorbed in the laboratory to children in the nursery playing on the floor with shiny pebbles. There are others at work diligently building new rooms, and some re-decorating those rooms outmoded by time. It would take volumes merely to tell about this structure itself without even mentioning what actually goes on inside.

Perhaps if you could let me know in which of these many departments of Mineralogy you are most interested, I might be able to tell you where best to obtain the information you need. Of this you can sure, that mineralogists everywhere will be only too glad to help you, no matter how much of a beginner, or how advanced you may be. They are really a most friendly breed.

Again expressing my regrets at the long delay in replying to your note, I am.

Very truly yours,

Charles A. Belz
Secretary, Philadelphia
Mineralogical Society

LOCATION FOR JASPER LOVERS

(Continued from page 222)

for jasper of cutting and polishing quality, a lady drew my attention to several pieces of black "rock" of grapefruit size, and asked me what they were. Picking them up I found that they were very heavy, and somewhat too heavy for volcanic material or form of lava, and figured that they must be meteorites. Later I gave them to a member of the Northern California Mineral Society, when a group of members were visiting my home to see my mineral collection.

GEM VILLAGE

(Continued from page 221)

the highways will trod the path to its door.

That foundation is now being layed. Tons of materials and carats of fine gems are being shipped in. Dealers of minerals and gems are trying to get locations first. Desirable business sites are not too plentiful.

Yes, I would say life and business could be very pleasant and profitable in Gem Village.

A New Feature To Appear Soon!

We hope to open up in the near future, in *Rocks and Minerals*, a department devoted to new minerals being discovered. Watch for it!

The Amateur Lapidary

ASTERISM IN A ROSE QUARTZ BALL

BY DR. W. B. S. THOMAS

Stanley I. Perham of West Paris, Maine, a jeweler and gem cutter of Maine gems, gave the writer two pieces of superb rose quartz, one of which was found by Reg Ross, of West Paris, about one mile above the North Waterford pumping station, a location known as Scribner's Ledge, Albany, Maine. This is without doubt the finest asteriated rose quartz on the American continent. The label read $30 on the piece.

Having been interested in asterism and chatoyancy for some time, the writer cut two balls—one from each location.

On the final polishing, one noted a series of parallel lines within the sphere. A line of black silk thread was glued to the surface of the ball following the parallel lines. Then a second grain of parallel lines was discovered, a second silk thread of yellow was glued to the surface following that grain. A third grain was suspected and found, and the blue silk thread applied along the surface. The three lines formed two isosceles triangles on opposite sides of the sphere. The star legs seen from the center of this sphere were at right angles to each of the respective sides of the triangle. Taking each leg of the star as a line one could rotate the top of the ball at right angles to the respective silk thread in a complete circumference. In short, there is a line of chatoyancy across and perpendicular to each of the "grains" and the crossing of these lines forms the six pointed star of rose quartz. Asterism is probably a three way chatoyancy!

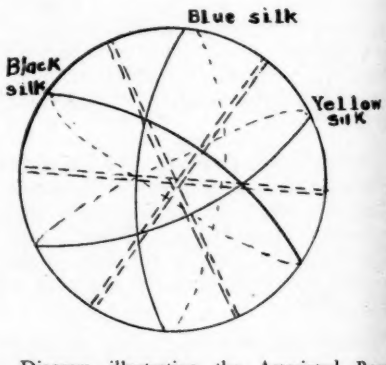

Diagram illustrating the Asteriated Rose quartz sphere. The double dotted lines are the lines of the six pointed star, the heavy single line represents each of the different colored threads glued on to follow a grain.

Midwest Federation of Geological Societies

The nine societies of the midwest which form the Midwest Federation of Geological Societies released in January, 1947, the *Midwest Geologist,* their official bulletin. The January issue, Vol. 1, No. 1, contains 12 pages which includes a foreward by the editors, Alger R. Syme and Loretta E. Koppen; an editorial by Alger E. Syme; Midwest Federation Beginnings, by Ben Hur Wilson, historian; "The Sands of Time," by George A. Thiel, Ph. D.; Lapidary Procedures, by William J. Bingham; Fossils of the Wisconsin Silurian, by James O. Montague; Pearls—Facts and Fiction, by E. Lillian Mihelcic; and a directory of the member societies and their officers. The address of the Federation is 831 Second Ave., So., Minneapolis 2, Minn.

CLUB AND SOCIETY NOTES

Mineralogical Society of So. California

Two sound pictures from the Bureau of Mines provided the program for the February meeting of the Mineralogical Society of Southern Cailfornia.

The first "The Evolution of the Oil Industry," traced the development of petroleum from earliest times. Scenes from the historic past showed the use of petroleum pitch in the building of Noah's Ark, the gathering of petroleum by American Indians for use as medicine, and depicted in detail the drilling of the famous Drake well in Pennsylvania in 1859. The early crude spring pole methods of drilling were shown and contrasted with modern rotary drills capable of boring miles into the earth as well as up-to-date prospecting and exploration by seismographic and other methods and the latest techniques in bringing petroleum to the surface through both land and off-shore wells. Obsolete ways of hauling petroleum by wagon were contrasted with present methods using pipe lines. railroad tank cars, trucks, and tankers. The production of natural gasoline and the advancements in petroleum refining were depicted by scenes showing the latest refineries, including plants engaged in the production of high-octane gasoline, aviation lubricating oils, and butadiene for manufacture of rubber.

The second picture, "Tin from Bolivia," opened with descriptive scenes of the mountain country of Bolivia, the world's largest producer of tin. Primitive methods of producing tin by surface mining in the beds and banks of dry streams, transportation by llamas to water sources, screening, jig separation, gravity concentration, crushing, sluicing, drying and llama transportation over mountain trails were shown. Then were pictured the modern methods of tin mining which employ large quantities of electric and water power. Deisel engines of special design, the creation of modern cities, homes, hospitals, and schools, After drilling and blasting the ore is transported to the sorting plant where it is screened, crushed, washed and sorted by hand then sent to the concentrating mill at Catavi. There it is separated by trommels, screened, treated in jigs, ground in rod mills, then transported to classifiers and concentrators. After additional grinding, frothing ingredients are mixed with the concentrates, the mineral sulphides being removed by flotation, the high-grade tin concentrate remaining. This concentrate is then dried, sacked, weighed and transported by rail to seaboard and shipped to the smelter in the United States. At the smelter, after crushing, sampling, drying, and roasting, the ore is placed in a boiler to remove impurities. From the smelting furnace the tin is separated from the slag, the tin flowing to the refinery kettles, Here takes place the final purification of the metal by agitation with steam and it is then cast into molds. Tin bullion is at last ready to begin its journey to factories throughout the United States.

Pauline A. Saylor
Covina, Calif.

Queens Mineral Society

A regular meeting of the Society was held on Monday evening, Feb. 10, 1947, at its headquarters, 85-01 118th St., Richmond Hill, N. Y.

Dr. Elizabeth Armstrong was the guest speaker and her talk dealt with the crystallography of forms of silica. Silicon dioxide was discussed in detail, the effect of heat, crystal habit and symmetrical development, interatomic bonding, and quartz in liquid form at reasonably high temperature were ably defined. The significance of striations in relation to c axis, formation of cap faces, major and minor rhombohedral forms, trigonal pyramids, and the presence of s faces on crystals the determination of right and left hand crystals by means of polarized light, and unusual faces were ably and clearly defined. Crystal freaks and Dauphine, Brazilian, Japanese, Esterel, and Sardinian twinning were dealt with at length and clarified with excellent graphs and drawings projected on a screen.

Dr. Armstrong highlighted her most interesting talk with a demonstration of the effect of pressure on conductivity, and illustrated the effect of high and low temperature on crystal habit by means of an ingenious flexible network of crystal faces mounted on a display panel.

William L. Stadler,
Secretary.

East Bay Mineral Society

The programs for March, 1947, are:

March 6th: Talking Movies "Wings over Ireland" presented by Mr. George E. Duff of The Standard Oil Campany.
A rare and interesting jewelry display by Miss Anne Zadielovich of E.B.M.S.

March 20th: Kodachrome pictures and lecture by Mr. H. W. Hansen on a little known portion of Utah Desert.
Display of cut and polished material by Mr. John Raine of Walnut Creek.
Pot Luck Dinner—Buffet Style. An event looked forward to by all.

Meeting place: Lincoln School, 11th and Jackson Streets, Oakland, Calif.

Harold C. Mahoney,
Corresponding Secretary

Mineralogical Society of So. Nevada

The main feature of the meeting held on Jan. 21, 1947, by tht Mineralogical Society of Southern Nevada in the Br. of P.&W. Bldg., was the election of officers.

Those elected were, Mr. J. Redding of Henderson, President; Mr. D. McMillan, Vice President and Mrs. Florence McMillan was re-elected Sec-Treasurer. A committee of three namely Mrs. E. L. Sapp, Mr. J. Westen of Boulder City and Mr. Bob McNeil of Henderson, was formed to take charge of field trips.

Other topics discussed were the advisability of using safety precautions while on field trips and the possibility of the Society obtaining its own lapidary equipment for use by all club members. Details were also planned for a display in the hobby show which is being sponsored by the Boulder City News, at the high school, on Feb. 1st. Mr. D. McMillan was appointed to take charge of the exhibit.

Mr. Redding displayed his portable grinding and polishing equipment also cabochons of opal. Mr. Mercer and Mr. O. Tilden showed specimens of jasper and petrified wood.

Guests at the meeting included the following, Mrs. J. Redding of Henderson, Miss Murphy, Miss Williams and Cal Walker, visitors in Boulder City.

Report For February

The Mineralogical Society of Southern Nevada began their year by participating in a Hobby Show, sponsored by the Boulder City News, on Feb. 1st., 1947.

D. McMillan, Chairman, stated that there were about 115 different minerals displayed with the $1,000 worth of gold specimens owned by Mr. A. G. Boynton, J. Redding and D. McMillan. At the display they also had Robert McNeil of Henderson, operate his Gem-Maker, to demonstrate to the public the steps involved in cutting and polishing. A great deal of interest was attracted by this demonstration.

President James Redding started the year's activities by calling a special meeting of the Society on Feb. 4th., to make arangements for forming a field trip committee. Those appointed to assume the responsibilities of that work were, Mrs. E. L. Sapp, Mr. J. Weston of Boulder City and Robert McNeil of Henderson. Their duties include scouting of areas and to conduct the tours.

At this meeting also, the Club made available to members shatter proof glasses to be used as a safety measure while on field trips, and Mr. Boynton donated a first aid kit.

The group also heard with regret that Mrs. P. Mercer, an active member, was very ill. We were all relieved when she appared for our regular meeting held Tuesday Feb. 18th.

At this meeting the Society further developed its plans by voting to hold two meetings a month with only one field trip, instead of the usual one meeting and the two field trips, which was felt did not allow sufficient time for instructive programs. Presently the one meeting will be strictly for business and the other will be for instructive entertainment. A program committee was formed including, Mrs. I. P. MacDonald, Mr. A. G. Boynton and Mr. D. McMillan all of Boulder City. They plan to engage speakers on the subjects of geology, meteorites, and various minerals, also to hold lessons in cutting and polishing.

Mr. J. Weston donated a set of photographs to the club album of the last two field trips.

Mrs. Florence McMillan
Sec-Treas.

Mineralogical Society of Utah

At the January meeting of the Mineralogical Society of Utah, the following officers were elected for the year 1947:

Junius J. Hayes	President
Marie Crane	1st Vice President
Wm. T. Rogers	2nd Vice President
Marcia F. Bagby	Secretary
Kenneth R. Tanner	Treasurer
Sears P. Roach	Historian

A very interesting illustrated lecture on the lava fields of southern Idaho was given by Mr. Walter H. Koch. Many beautfiul colored pictures of scenes along the tributaries of the Snake River were included in the picture shown.

Redwood Empire Gem & Mineral Society

The Society started the new year by electing the following officers. Pres. Bill Nisson, 815 D St., Petaluma Calif.—Vice Pres., Art Ellis, 1620 Sebastopol Rd., Santa Rosa, Calif.—Sec. Treas., Clara V. Taft, 2650 So. Dutton Ave., Santa Rosa, Calif.

Starting in July of '46 with a charter of 12 members we now have 33 with a big percentage of them particpating in all activities. Our name originally was Sonoma County Mineral Society but in February, 1947, it was changed to Redwood Empire Gem and Mineral Society.

Our president, Bill Nisson, has done considerable work in collecting, analyzing, and identifying minerals and is known to many of our prominent mineralogists. He is mapping out a very interesting and edifying program for the coming year.

On the 22nd. of January, Mr. Vonson of Petaluma, who has one of the best of the private collections, invited us for the evening to see it and made us very welcome indeed. It is a rare privilege to see such a collection.

Anyone visiting our locality is invited to make themselves known to us at either 1620 Sebastopol Road, Santa Rosa, our headquarters, or 429 4th St. where our past president Bill Bushnell, will welcome you. We meet the second Wednesday in the month.

Clara V. Taft, Sec.

Stamford Mineralogical Society

Sixteen rockhounds attended the organization meeting, held in the Stamford Museum, Stamford, Conn., and all showed enthusiasm for this long felt need of the community.

Mr. W. J. Mathews, of Norwalk, was elected president; Dr. A. N. Winchell, former professor of Geology, University of Wisconsin, vice-president; and Mrs. J. M. Towne (R.&.M.A. member) secretary-treasurer.

The Curator, Mr. Ernest T. Luhde, offered the facilities of the Museum and our vice-president offered the benefit of his knowledge and experience.

The Society plans to have meetings on the 4th Monday in each month. Speakers will be asked to come and lecture on mineralogy and geology and during the summer months there will be field trips to well known mineral localities. Members will contribute specimens to what will be known as The Connecticut Collection. Mrs. F. S. Calhoun (R.& M.A. member) will have charge of the Exchange Department.

There were five young men present to represent the Junior Department. We were glad to see the young people and hope to recruit more of them.

Mrs. J. M. Towne, Sec.

Imperial Lapidary Guild

The Imperial Valley Mineralogists have swung into action on plans for their second Gem and Mineral exhibit, scheduled for March 29th and 30th in Central Junior College auditorium.

The first show held in May of last year attracted such a wide-spread and enthusiastic responce that the two clubs, Imperial Lapidary Guild and Imperial Gem and Mineral Society, have decided to give an annual show.

Semi-precious stones will be featured, polished for cabinet specimens, cut into cabochons, and worked into jewelry..

Some nice mineral specimens will be on exhibit. There will be a large and varied display of fluorescent material.

Cutting and polishing equipment will be demonstrated.

The grab bag, a popular attraction, will have more polished material this year and door prizes will consist of member-made jewelry and novelties.

Leo DeCelles and Sam Robinson, presidents of the two Clubs, have named George Moore, Leon Miller, L. G. "Blackie" Beleal, and Ira Huffman as chairmen of managing committees on housing, floor arrangements, and lighting.

A cordial invitation is extended to all Rock Hounds anywhere—anyplace—to be our guests.

Bring along your brag rocks, we would like them too.

L. G. BELEAL
Corresponding Secretary
575 Euclid
El Centro, California

North Country Mineralogical Club

To date, there have been two regular meetings of the club. At the first, Mr. Arthur Sandiford, of the faculty of Champlain College in Plattsburg, had on exhibit his large collection of polished agates. Mr. Sandiford gave an explanation of the way agates are formed in nature, and the method that is used to make agates "artificially." He told where many of the stones he had on exhibit were found, and was most generous in answering questions. About 20 people attended this first meeting.

At the second meeting, held early in January, 1947, Dr. Charles W. Finley, of Keeseville, spoke on fluorescent minerals, showing many spectacular specimens from his own collection, with the aid of a portable quartz lamp. About 40 people attended this meeting, including 15 junior high school pupils from the Laboratory School of Plattsburg State Teachers College, who came in a group.

At this time, it was decided to call the organization the North Country Mineralogical Society. The following officers were elected: President, William R. Ellsbury, Keeseville; Vice-president, Dr. Walter L. Taylor, Plattsburg; Secretary, Miss Gertrude E. Cone, Keeseville; Treasurer, Miss Jean Hoeffler, Plattsburg; Trip Manager, Mr. Charles Dandrow, Plattsburg. Meetings are to be held on the second Thursday of each month, in the lecture room of the Plattsburg Public Library, Plattsburg, N. Y. It is hoped that any one in northeastern New York State who is interested in mineralogy, both amateurs and experts, will join the group and take part in its activities. As soon as weather and roads permit, we hope to plan frequent field trips.

Gertrude E. Cone, Secretary

Yavapai Gem & Mineral Society

Prescott, Arizona. Colored slides of gem stones and minerals were shown at a special February meeting of the Yavapai Gem and Mineral Society, by J. Lewis Renton of Portland, Oregon. Mr. Renton's Kodachromes of these beautiful stones comprise the largest collection of its kind in the world. The program drew a full house.

At the regular meeting, Moulton B. Smith gave a talk on the various formations of chalcedony. The following Sunday the Society made a field trip to the vicinity of the Perkinsville ranch toward the Verde River, and found some odd nodules and a variety of fossils.

Ida Smith, Sec.

Mineralogical Club of Hartford

A regular meeting of the Club was held on Feb. 12, 1947, at 7:45 p.m., at 249 High St., Hartford, Conn. The speaker was Ernest Lewis, of the Crystal Research Laboratories, who spoke on "Manufacturing Procedures on Quartz Crystals."

Four Corners Rock Club

At a meeting held Friday evening, Jan. 24, 1947, at Marvin's Rock Shop, situated on Highways 550 and 160, in Durango, Colo., organization of the Four Corners Rock Club was effected.

The Four Corners Rock Club will solicit its membership to residents of the Four Corners area of southwestern Colorado, northwestern New Mexico, southeastern Utah, and northeastern Arizona, and its roster will include commercial mineral dealers, collectors, rockhounds, and others who are interested in mineralogy, geology, or archaeology. Membership will not be limited.

Chosen as president of the organization for its first year was Kenneth Owens, of Animas City; vice-president is Myrle Hall, of Animas City; secretary is H. C. Brockman, of Durango; and treasurer is W. E. Barber, of Durango.

The publicity committee of the newly-formed rock club is composed of Leo R. Brewington, chairman; Marvin Ellsbury and Carl Hudson. Brewington is a Durango newspaperman, while Ellsbury and Hudson are mineral dealers of the Four Corners country, Ellsbury residing in Durango and Hudson in Animas City.

Program committee chosen to head the group consists of Mrs. Ethel Stafford, of Durango, as chairman; and Mrs. Kenneth Owens, of Animas City, and Chris Bilder, of Durango.

Rev. Homer Root, of Durango, assisted by Mrs. Marvin Ellsbury, of Durango, and Mrs. Chris Belder, of Durango, are preparing the by-laws of the new organization which will be read at the next meeting, to be held Monday, Feb. 3rd, in the basement of the Durango First Methodist Church.

The Club plans to hold meetings regularly on the first Monday of each month and special meetings, field trips, lectures, and socials on specially-announced dates.

Purpose of forming the club is to promote and foster interest in rocks, minerals, gems etc., and to bring together all those parties interested in getting outdoors on trips to explore the many colorful areas in the Four Corners country adjacent to Durango, Farmington, Cortez, and Blanding. Lectures, papers, picture shows and other such programs will be featured during winter months.

The Club will sponsor an annual show, after organization has been completed and their work underway, and will also hold auctions at which collectors will be invited to become purchasers.

W. E. Barber won the door prize at the first organization meeting, given by Marvin's Rock Shop. It was a beautiful specimen consisting of mica and beryl crystals on a feldspar base.

Texas Mineral Society

At the last few meetings of the Texas Mineral Society of Dallas, Texas, the members have been treated to some splendid programs..

Dr. Arthur Richards, of the geological staff of Southern Methodist University, gave a talk on the Cold Springs, Nevada, Mining area. Dr. Richards spent some time in this area while connected with the United States Bureau of Mines. He also showed some color slides of this district.

Dr. Ellis W. Shuler, author of the book, "Rocks and Rivers of America," also head of the geology department of Southern Methodist University, gave a review of this book. No rockhound library is complete without this splendid book. His review of it was enjoyed by all and this society was fortunate indeed to have the author give this program.

Chester A. Howard, astronomer and meteorite hobbyist, gave a very interesting program on meteors and meteorites. He discussed the Winslow, Arizona; 1908 Russian; and the Odessa, Texas, falls, which was very interesting. He also showed his collection of meteorites which he had found.

At the last meeting of the Society we were very fortunate to have J. Lewis Renton, of Portland, Oregon, visit us and show his collection of color slides of his agates and minerals. The collection is superb and any society would find it well worth their time to view it. We hope that when any collector is in Dallas he will visit with us.

Los Angeles Lapidary Society

Mr. Herbert L. Monlux entertained the Los Angeles Lapidary Society at the February meeting, by showing on the screen, his collection of slides of gem materials.

So far, his collections consists of about 150 slides, mostly of Southern California materials. Mr. Monlux has improved over the old methods of mounting the thin slices on glass, by using plastic 35mm. film holders and cementing the slabs in them.

I am sorry to report that the public exibit scheduled for this spring has been postponed as the exihit hall at the County Museum, that we want, will not be available until March 15 to April 15, 1948.

The field trip for this month was to the Bicycle Lake area, east of Yermo, California.

E. G. Peters
656 E. Manchester Ave.
Los Angeles 1, Calif.

Marquette Geologists Association

A regular meeting of the Association was held at the Chicago Academy of Science, Chicago, Ill., on Feb. 1, 1947. Langdon H. Longwell was in charge of the program and one of the features was the showing of his Kodachrome slides of the Michigan Copper Country.

Newark Mineralogical Society

Interest in the meetings of the Newark Mineralogical Society is continuing to run high, with large attendances to hear speakers on timely and varied topics. At the January 5th 1947, meeting Mr. Frank Lewis of Brooklyn gave a currently appropriate and authoritative talk on "Radioactive Minerals," telling of their discovery, occurrence in nature, properties, and some of the permissible parts of the story of their connection with atomic energy developments. He brought with him many fine samples with which to illustrate his talk.

At the February 2nd meeting, Mr. Jay T. Fox of Seaford, Long Island, N. Y., gave a very interesting talk on "Mineralogical Photomacrography and Photomicrography with Kodachrome Film." Mr. Fox not only described the exacting technique of photographing mineral specimens of various sizes in natural color on slides for projection to greatly enlarged dimensions, but he also showed about a hundred of the slides which he had made. As evidence of their naturalness, many of the minerals shown were identified instantly by the members as the pictures appeared on the screen.

At both meetings there were appropriate exhibits by several of the members.

The Socicty meets in the Newark Museum, Newark, N. J.

R. P. Milburn
For Publicity Committee

Rocky Mountain Federation of Mineral Societies

The third annual convention of the Rocky Mountain Federation of Mineral Societies will be held in Salt Lake City, Utah, June 12-13th, at the Newhouse Hotel, which will be the center of all their activities. Exhibits of specimens and material for sale will occupy the ballroom both days.

A business meeting will be held Friday morning; a dinner in the evening. A two day field trip to Topaz Mountain will occupy the 14-15th. The convention will be open to all interested in Rocks and Minerals.

For further informaion please write to:
Prof. Junius J. Hayes, Prseident,
1148 East 1st. South Street,
Salt Lake City, 2, Utah
or to,
Mrs. C. W. Lockerbie, Secretary
223 West 9th. South Sreet,
Salt Lake City 4, Utah

Rochester Academy of Science
(Mineralogical Section)

A regular meeting of the Section was held on March 13, 1947, at 8 p.m.., at the Rochester Academy of Science, Rochester, N. Y. The program was devoted to "Crystallography and the Construction of Crystal Models" by Mr. and Mrs. David E. Jensen.

Maine Mineralogical & Geological Society

The Maine Mineralogical and Geological Society held its meeting in the offices of Frederic Laughlin, 119 Exchange St., Portland, Me., on January 31st, 1947, with its new president, Miss Jessie L. Beach, in the chair.

As this was the first meeting of the year with the new board of officers, it was a busy and interesting meeting.

Plans were formulated to make, 1947 a banner year as this is the Society's Twentieth anniversary year.

After the business session, Miss Beach showed slides of the Carlsbad Caverns in New Mexico, the Howe Caverns of New York, and the Petrifield Forest of Arizona.

A sale of specimens was held after the meeting.

Thirty-five members were present including several new members.

Orland H. Mayberry

Pomona Valley Mineral Club

The February meeting of the POMONA VALLEY MINERAL CLUB was held in the Chemistry Building of Pomona College, in Claremont, Calif. Following the regular business meeting, Miss Esther Leggee gave a short talk on "AMETHYSTS"—February Birthstone—in the series of birthstones.

Main feature of the evening was the Club's second auction, Mr. Hollis B. Page, past president, acting as auctioneer. Members and friends made generous donations of specimens —making the monetary contribution to the treasury very satisfactory. A box of Russian Rocks (cookies) created lively interest and bidding.

Door prizes concluded the evening's program.

Edythe M. Thompson
Pub. Chm.

Joliet Mineralorist Society

An exhibition night was held by the Society on Feb. 3, 1947, during which iron and copper minerals of northern Michigan and Wisconsin were displayed. The president of the Society, Louis Knowlton, spoke on collecting in those two areas.

The mineral talk of the evening was given by Frank L. Fleener, whose subject was "Titanium."

At the Feb. 17th meeting, two reels of talkie-movies upon geological subjects were shown. The speaker for the evening was Harlow D. Grose whose subject was "The Carolina Bays."

The Society meets in the Joliet Township High School and Junior College, Joliet, Ill.

WITH OUR DEALERS

E. Mitchell Gunnell, of Denver, Colo., is holding a March clearance sale of fine crystallized specimens.

A newcomer to *Rocks and Minerals* is W. J. Kane Lapidary, of San Francisco, Calif., who can supply nice cabochons.

A new advertiser is Bodvin's Magic Wishing Well Agate Shop, of Depoe Bay, Ore., who have some nice gem material—a lot of it slabbed.

The Colorado Gem Co., is for sale! If interested, contact the owner, Frank Morse, of Bayfield, Colo.

MaryAnn Kasey, of Prescott, Ariz., has some attractive Arizona gem agates.

Martin's Mineral Mart, of Gilroy, Calif., is featuring nodules and other gem minerals.

Another new advertiser is Linick Chemical Co., of Chicago, Ill., who offer one of their products—brown sapphire powder for polishing minerals..

Sawed sections of unique and colorful minerals may be obtained from Harrison S. Cobb, of Boulder, Colo.

Forrest L. Parmenter, of Charlestown, N. H., can furnish recirculating "Morey" pumps for diamond saw machines, etc.

Grieger's, of Pasadena, Calif., are holding a stock reduction sale. Get in on it.

E. R. Hickey, Sr., of Los Angeles, Calif., is another new advertiser. He has 3 good books, also an interesting gem stone from South Africa.

Fluorescent calcite with oil and uranium is a feature of Frank Duncan and Daughter, of Terlingua, Texas.

Still another new advertiser is O and H Gem and Jewelry, of Burbank, Calif., who offer Orcutt faceting equipment.

Ten minerals for only $5.00—see ad of Universal Minerals, of Los Angeles, of Los Angeles, Calif.

Have you an iris agate? You may get one from A. W. Killick, of Baker, Ore.

More lapidary supplies are listed by Roth's Agate Shop, of Waterloo, Iowa.

Still another new advertiser is the Hodge Podge Shop, of Grants Pass, Ore., who has an opening special.

And still another new advertiser is the noted publishing firm, D. Van Nostrand Co., Inc., of New York City, who announce to our readers the issuance of O. C. Smith's great new book—Identification and Qualitative Chemcial Analysis of Minerals."

Selected opalized wood is a special this month of the Western Trader, of Sacramento, Calif.

J. L. Davis & Son, of Hot Springs, Ark., have another new one to intrigue our many readers!

B. M. Brehm, of Warren, Ohio, has some nice labelled polished ends of slabs.

If you desire some attractive nodules—polished or unpolished—Clarence A. Ames Co., of Portland, Ore., can fill your order.

After many months absence, Chas. O. Fernquist, of Spokane, Wash., is with us again—featuring 2 choice lead minerals and a number of interesting books.

Some new arrivals are announced by C. Jack Frost, of Banning, Calif.

Four choice minerals are Offered this month by Burminco, of Monrovia, Calif. Order them all.

Lionel Day, of New York City, is an importer of gem rough and can supply many varieties.

Precious black opal from a new locality is advertised by the Mineral Foundation, of Tucson, Ariz.

J. J. Jewelcraft, of Montrose, Calif., announce the opening of their new retail store in Pasadena, Calif.

The specimens listed by Ward's, of Rochester, N. Y., are collector's items. Look them over!

More Idaho gem materials are listed by Lay-Art Gem Shop, of Boise, Idaho.

Dr. Ralph E. Mueller, of Kansas City, Mo., who has been using the classified columns for over a year, has a nice display ad in which he is featuring Mexican fire opals.

Need a gem drill? The Sartwell drill is a specialty of Long Beach Mineral & Lapidary Supply Co., of Long Beach, Calif.

An assortment of some interesting pegmatite minerals may be had from C. A. Weeks, of Meredith, N. H.

Schortmann's Minerals, of Eas.hampton, Mass., list a number of interesting low priced mineral specimens.

Hugh A. Ford, of New York City, releases his 10th list of fine minerals from an old collection.

Knowlton Minerals, of Joliet, Ill., have in stock some nicely xled manganite specimens.. Get one before they are all gone.

Romart Gem & Mining Co., of Barstow, Calif., found an interesting deposit of palm wood. You should order a specimen.

A new California cutting material is offered cutters by Toupal Brothers, of San Jose, Calif.

Lloyd M. Demrick of San Francisco, Calif., has some bargains in jewelers saw blades.

Western Mineral Exchange, of Seattle, Wash., has some March specials.

RX Laboratory, of Torrance, Calif., announces some new additions to its line of lapidary equipment.

Chas. E. Hill, of Phoenix, Ariz., has some more fine gem material.

Gemarts, of San Diego, Calif., list a number of choice items.

How about brushing up on your geology? Muhlenberg College, of Allentown, Penn., will conduct summer field courses in the subject—enroll at your earliest.

Maricopa Gem & Mineral Mart, of Morristown, Ariz., announces a new find of Arizona agate nodules.

A new advertiser is Pacific Rock Mart, of Los Angeles, Calif., whose first offering are nice sawed slices of gem material.

Another new advertiser is the George Marchand Studio, of Ebenezer, N. Y., who can supply a Trilobite desk ornament.

And still another new advertiser is Mrs. E. Cailland, of Long Beach, Calif., who has some bargains in sliced petrified wood, agate, etc.

WAS SHERLOCK HOLMES A MINERALOGIST?

BY E. W. BLANK, Metuchen, N. J.

A number of studies have been published lately detailing the activities of Sherlock Holmes as a chemist (1) (2). It is pertinent to inqure whether Holmes was a mineralogist in view of the fact that Dr. Watson, in summarizing the intellectual attainments of his new friend shortly after taking rooms with Holmes, pointed out that Holmes possessed a practical but limited knowledge of geology (3). According to Watson, Holmes was able to tell by a glance from what portion of London had been derived traces of soil splashed on trouser cuffs.

Once, at least, Holmes and Dr. Watson passed a vacation in Norway (4). This in itself is of interest to mineral collectors but one can only speculate as there are no further facts warranting application of the principles of deduction as laid down by Holmes. Far more conclusive evidence is exhibited in the "ADVENTURE OF THE BLUE CARBUNCLE" where Holmes showed a deplorable lack of mineralogical knowledge in describing a gem carbuncle as being composed of crystallized charcoal (5).

From the meagre evidence in the adventures it appears admissable to infer that Holmes was a so-called practical geologist but lacked knowledge of systematic mineralogy.

Literature Cited

(1) J. H. and Humfrey Mitchell, "Sherlock Holmes The Chemist," Baker Street Journal *1*, 245 (1946).
(2) Graham, "Sherlock Holmes: Analytical Chemist," J. Chem. Ed. *22*, 508 (1945).
(3) A STUDY IN SCARLET, p. 16. Page numbers throughout the adventures refer to "The Complete Sherlock Holmes," The A. Conan Doyle Memorial Edition, 2 vols., Doubleday, Doran & Co., Inc., New York (1931).
(4) THE ADVENTURE OF BLACK PETER, p. 167.
(5) ADVENTURE OF THE BLUE CARBUNCLE, p. 164.

BIBLIOGRAPHICAL NOTES

Identification and Qualitative Chemical Analysis of Minerals: By Orsino C. Smith.

This is a new book which made its first appearance on Jan. 3, 1947. It was published by D. Van Nostrand Co., Inc., of New York City.

Mr. Smith, a petroleum and chemical technologist who resides in Bell, Calif., needs no introduction to our readers as he is well known—being the author of a very popular book, "Mineral Identification Simplified," which has gone through several editions. If his first book was a great success, his new one will be many times more so as it seems to have been prepared especially for the amateur collector. Not only is the text in large pleasing type, and in a language easily understood by the amateur, but the many fine colored illustrations will make a big hit with our readers, be they amateurs or advanced collectors. For the first time, to the reviewer's knowledge, excellent color plates of bead tests and tests on plaster and charcoal blocks, make their appearance—in this very fine book. There are hundreds of colored illustrations, many of them small, however, but they are all good and especially those of fluorescent minerals.

The book is divided into 7 chapters as follows: Chapter I, pp. 1-24, is devoted to the physical properties of minerals as specific gravity, hardness, color, etc. Chapter II, pp. 25-42, is devoted to fluorescence. Chapter III, pp. 43-64, is devoted to mineral chemistry. Chapter IV, pp. 65-86, contains tables of chemical reactions. Chapter V, pp. 87-136, devoted to qualitative chemical tests. Chapter VI, pp. 137-170, is devoted to blowpiping tests. Chapter VII, pp. 172-323, contains tables for identification. A general index appears on pp. 325-329. A complete mineral index of more than 2,000 species are listed on pp. 331-351; each mineral listed contains two numbers which refer to the mineral identification tables (pp. 172-323, which are divided into 13 groups). The second number of the listed mineral refers to the group in which it may be found, and the first number gives its numerical position in that group.

Mr. Smith, the author of this fine book, is to be commended. He has not only listed all the minerals ever recorded in one book, over 2,000 up to 1945, but classified them by their specific gravity and hardness in tables that give all their other properties. The publishers, D. Van Nostrand Co., Inc., likewise should be commended for the excellent print job.

The book contains 351 pages with a large number of colored illustrations. It is 6x9 inches in size, has a dark blue cover and an attractive jacket on whose grayish front appear 10 minerals in color. Price $6.50.

Copies of the book may be purchased from the author, Orsino C. Smith, Dept. R, 5157 Santa Ana St., Bell, Calif., or from the publishers, D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y.

Peter Zodac

TOMLINSON ON DIABASES

(Continued from page 219)

rock, and trailing behind, the diabase showed marked hydration effects very rich in interstitial material. To quote Mr. Tomlinson, "As I interpret the evidence, a blob of the granophyre was being assimilated by the basaltic magma, and being of lower specific gravity, was rising through the magma when trapped by solidification."

Mr. Tomlinson's general observations indicated that the final story of the rocks has not yet been told, perhaps never will be, but that newer evidence tends ever more to harmonize individually held opinions rather than conflict with them. This is perhaps a natural consequence of constantly expanding fields of study eventually touching on the frontiers and uniting localized areas of knowledge which exisiting alone, appear by themselves to represent antitheses of thought.

The Rocks and Minerals Association

(Members All Over the World)

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Organized in 1928 for the increase and dissemination of mineralogic knowledge

To stimulate public interest in geology and mineralogy and to endeavor to have courses in these subjects introduced in the curricula of the public school systems; to revive a general interest in minerals and mineral collecting; to instruct beginners as to how a collection can be made and cared for; to keep an accurate and permanent record of all mineral localities and minerals found there and to print same for distribution; to encourage the search for new minerals that have not yet been discovered; and to endeavor to secure the practical conservation of mineral localities and unusual rock formations.

Ever since its foundation in 1928, the Rocks and Minerals Association has done much to promote the interest in mineralogy. It has sponsored outings, expeditions, formations of mineralogical clubs and the printing of many articles that have been a distinct contribution to mineralogy.

Those of our readers who are members of the Association can rightly feel that they too were sponsors of these many achievements that have helped to give mineralogy a national recognition. Among your friends there must be many who would like to have a part in the Association's work—to share with you the personal satisfaction, the pleasure, and the benefits of membership. Will you give your friends this opportunity to join the Association by nominating them for membership?

Each new member helps to extend the Association's activities—helps to make your magazine larger, better, and more interesting, and above all assists in the dissemination of mineralogical knowledge.

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Mineralogical clubs which subscribe for **Rocks and Minerals** also become affiliated members of the Rocks and Minerals Association and enjoy all the advantages which such an affiliation affords.

A number of clubs hold membership in the Association, participate in the annual outings, and co-operate in many ways in furthering the aims and ambitions of the Association.

Affiliation with the world's largest mineralogical society cannot fail to increase membership, enlarge circles of acquaintanceship, and stimulate a keener interest in mineralogy.